















RESEARCHES,  
Concerning

THE INSTITUTIONS & MONUMENTS

OF  
the Ancient Inhabitants

OF

AMERICA,

with Descriptions & Views

OF SOME OF THE MOST

Striking Scenes

in the

CORDILLERAS!

Written in French by

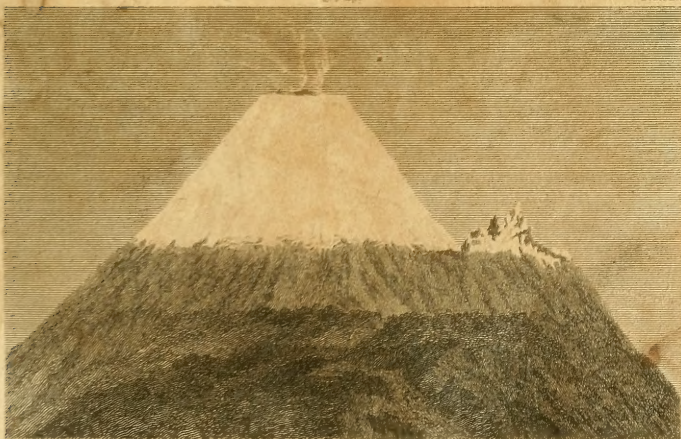
ALEXANDER DE HUMBOLDT,

& Translated into English by

Anna Maria Williams.

Vol. I.

Plate 10.



Page 26, Vol. I.

VIEW OF COTOPAXI.

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# ADVERTISEMENT

OF THE

EDITOR.

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*THE Views of the Cordilleras and Monuments of the Natives of America, which form the Picturesque Atlas of the Quarto Edition of M. M. de Humboldt and Bonpland's Travels in the Equinoxial Regions of the New Continent, consist of one large Volume in Folio, ornamented with Sixty-nine Plates engraved by the first Artists of Berlin, Rome, and Paris. This Work, which is highly interesting, from the numerous Researches it contains in the Antiquities of Mexico and Peru, from the Description of the most remarkable Scenes of the Cordilleras, and the Manners of its Inhabitants, should accompany the Octavo Edition of this Voyage; but the Picturesque Atlas in Folio being, from its Nature, of too high a Price for*

*Readers in general, it has been judged necessary to Reprint the Text in two Octavo Volumes. The greater Part of the Subjects contained in the Atlas may be read without consulting the Plates, but some Parts of the Text to be well understood, require the Aid of the Plates. For this Reason, Nineteen Engravings have been selected by M. de Humboldt, from Sixty-nine contained in the Folio Edition, which Plates are reduced in order to be placed at the End of the Two Octavo Volumes.*

*The Geographical and Physical Maps will accompany the Personal Narrative.*



**PICTURESQUE ATLAS**  
OF  
*TRAVELS*  
TO THE  
**EQUINOCTIAL REGIONS**  
OF  
**THE NEW CONTINENT.**

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*INTRODUCTION.*

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**I** HAVE collected, in the following work, whatever relates to the origin and first progress of the arts among the natives of America. Two thirds of the plates which it contains present specimens of the remains of their architecture, sculpture, historical paintings, and hieroglyphics relative to their division of time, and the system of their calendar. To this representation or

their monuments, which are interesting to the philosophical study of man, I have added a few of the most remarkable picturesque views of the new continent. The motives for this selection will be found in the general observations at the beginning of this Essay.

The description of each plate, as far as the nature of the subject admits, forms a separate treatise. I have dwelt more at length on such as could throw light on the analogies existing between the inhabitants of the two hemispheres ; and we shall be surprised to find, towards the end of the fifteenth century, in a world which we call new, those ancient institutions, those religious notions, and that style of building, which seem in Asia to indicate the very dawn of civilization. The characteristic features of nations, like the internal construction of plants, spread over the surface of the globe, were the impression of a primitive type, notwithstanding the variety produced by the difference of climates, the



nature of the soil, and the concurrence of many accidental causes.

In the beginning of the conquest of America, the attention of Europe was chiefly directed toward the gigantic constructions of Couzco, the high roads carried along the centre of the Cordilleras, the pyramids with steps, and the worship and symbolical writings of the Mexicans. The country around Port Jackson, in New Holland, and the island of Otaheite, have not been more frequently described in our times, than were the regions of Mexico and Peru at that period. To form a proper estimate of the simplicity, the true and local colouring which characterizes the descriptions of the first Spanish writers, we must have visited the spot. While we peruse their writings, we regret that they are not accompanied with drawings, to have given us a precise idea of the numerous monuments which became the prey of fanaticism, or which have been suffered to fall into ruin from negligence not less culpable.

The ardour, with which America had been the object of investigation, diminished from the beginning of the seventeenth century. The Spanish colonies, which were the only regions formerly inhabited by civilized nations, were shut against foreigners; and recently, when the Abbé Clavigero published in Italy his ancient history of Mexico, the facts, attested by a crowd of ocular witnesses, often hostile to each other, were regarded as extremely doubtful. Some distinguished writers, more struck with the contrasts than the harmony of nature, have described the whole of America as a marshy country, unfavourable to the increase of animals, and newly inhabited by hordes as savage as the people of the South Sea. In the historical researches respecting the Americans, candid examination had given place to absolute scepticism. The declamatory descriptions of Solis, and of some other writers, who had never quitted Europe, were confounded with the simple but true nar-

ratives of the first travellers ; and it seemed to be the duty of a philosopher, to refuse assent to every observation made by the missionaries.

Since the end of the last century, a happy revolution has taken place in the manner of examining the civilization of nations, and the causes which impede or favour its progress. We have become acquainted with countries, the customs, institutions, and arts of which differ almost as widely from those of the Greeks and Romans, as the primitive forms of extinct races of animals differ from those of the species, which are the objects of descriptive natural history. The society at Calcutta has thrown a luminous ray over the history of the people of Asia. The monuments of Egypt, which are at present delineated with singular precision, have been compared with the monuments of countries the most remote ; and my own recent investigations on the natives of America appear at an epocha, in which we no longer deem unworthy of



attention whatever is not conformable to that style, of which the Greeks have left such inimitable models.

It might have been preferable to have arranged the materials, contained in this work, in geographical order; but the difficulty of collecting, and terminating at the same time, a great number of plates engraved in Italy, Germany, and France, has prevented me from following this method. The want of order, compensated, to a certain degree, by the advantage of variety, is also less reprehensible in the descriptions of a Picturesque Atlas, than in a regular Treatise; and I shall endeavour to remedy this inconvenience by a table, in which the plates are classed agreeably to the nature of the objects they represent.

## I. MONUMENTS.

### A. *Mexican.*

Statue of a priestess.

Pyramid of Cholula.

Fort of Xochicalco.

Bas-relief, representing the triumph of a warrior.

Calendar and hieroglyphics of the days.

Vases.

Bas-relief sculptured around a cylindrical stone.

Axe with engraved characters.

Sepulchral house of Mitla.

Hieroglyphical paintings.

#### Manuscripts of the Vatican.

of Veletri.

of Vienna.

of Dresden.

of Berlin.

of Paris.

of Mendoza.

of Gemelli.

#### B. *Peruvian*.

House of the Inca at Cannar.

Inga-Chungana.

Ruins of Callo.

Inti-Guaicu.

#### C. *Muyscas*.

Calendar.

Sculptured heads.

## II. VIEWS.

A. *Elevated plain of Mexico.*

Great square of Mexico.

Basaltes of Regla.

Coffer of Perote.

Volcano of Jorullo.

Porphyry columns of Jacal.

Organos of Actopan.

C. *Mountains of South America.*

Silla de Caraccas.

Air Volcanoes of Turbaco.

Cataract of Tequendama.

Lake of Guatavita.

Natural bridge of Icononzo.

Passage of Quindiu.

Cataract of Vinegar river.

Chimborazo.

Volcano of Cotopaxi.

Pyramidal summits of Ilinissa.

Nevado of Corazon.

Nevado of Cayambe.

Volcano of Pichincha.

Rope bridge of Penipe.

Letter-carrier of Jaen Bracamoros.

Raft of Guayaquil.



I have endeavoured to copy, with the greatest exactness, the objects exhibited in these engravings. Those who are employed in the practical profession of the arts are aware, how difficult it is to attend minutely to the great number of plates, which compose a Picturesque Atlas. If some be less perfect than connoisseurs might wish, this imperfection ought not to be attributed to the artists employed, under my inspection, in the execution of my work, but to the sketches which I drew on the spot, and often in very difficult circumstances. Several landscapes have been coloured, because in this sort of engraving, the snow detaches itself more strikingly from the azure of the sky, and the imitation of the Mexican paintings rendered the mixture of coloured plates with engravings indispensable. I have felt how difficult it is to give the former that vigorous tone of colouring, which we admire in the Oriental Scenery of Mr. Daniel.

In the description of the monuments of

America, I have attempted to keep an equal tenor between the two methods followed by those learned men, who have investigated the monuments, the languages, and the traditions of nations. Some, allured by splendid hypotheses, built on very unstable foundations, have drawn general consequences from a small number of solitary facts : they have discovered Chinese and Egyptian colonies in America ; recognized Celtic dialects and the Phenician alphabet ; and, while we are ignorant whether the Osci, the Goths, or the Celts, are nations emigrated from Asia, have given a decisive opinion on the origin of all the hordes of the New Continent. Others have accumulated materials without generalizing any idea ; which is a method, as sterile in tracing the history of a nation, as in delineating the different branches of natural philosophy. May I have been happy enough to avoid the errors, which I have now pointed out ! A small number of nations, far distant from each other, the

Etruscans, the Egyptians, the people of Thibet, and the Aztecks, exhibit striking analogies in their buildings, their religious institutions, their division of time, their cycles of regeneration, and their mystic notions. It is the duty of the historian to point out these analogies, which are as difficult to explain as the relations that exist between the Sanscrit, the Persian, the Greek, and the languages of German origin; but in attempting to generalize ideas, we should learn to stop at the point where precise data are wanting. In conformity to these principles, I shall mention the consequences to which the opinions I have adopted seem to lead respecting the natives of the New World.

Neither an attentive examination of the geological constitution of America, nor reflections on the equilibrium of the fluids, that are diffused over the surface of the Globe, lead us to admit, that the New Continent emerged from the waters at a later period than the Old: we discern in the former the same succession of stony strata, that we find



in our own hemisphere ; and it is probable, that, in the mountains of Peru, the granites, the micaceous schists, or the different formations of gypsum, and gritstone, existed originally at the same periods as the rocks of the same denominations in the Alps of Switzerland. The whole globe appears to have undergone the same catastrophes. At a height superior to that of Mount Blanc, on the summit of the Andes, we find petrified sea-shells ; fossile bones of elephants are spread over the equinoctial regions ; and what is very remarkable, they are not discovered at the feet of the palm trees in the burning plains of the Orinoco, but on the coldest and most elevated regions of the Cordilleras. In the New World, as well as in the Old, generations of species long extinct have preceded those, which now people the earth, the waters, and the air.

There is no proof, that the existence of man is much more recent in America than in the other continent. Within the tropics, the strength of vegetation, the breadth of

rivers, and partial inundations have presented powerful obstacles to the migration of nations. The extensive countries of the north of Asia are as thinly peopled, as the savannahs of New Mexico and Paraguay ; nor is it necessary to suppose, that the countries first peopled are those, which offer the greatest mass of inhabitants. The problem of the first population of America is no more the province of history, than the questions on the origin of plants and animals, and on the distribution of organic germs, are that of natural science. History, in carrying us back to the earliest epochas, instructs us that almost every part of the Globe is occupied by men who think themselves aborigines, because they are ignorant of their origin. Among a multitude of nations, who have succeeded, or have been incorporated with each other, it is impossible to discover with precision the first basis of population, that primitive stratum beyond which the region of cosmogonical tradition begins.

The nations of America, except those which border on the polar circle, form a single race, characterized by the formation of the scull, the colour of the skin, the extreme thinness of the beard, and straight and glossy hair. The American race bears a very striking resemblance to that of the Mongul nations, which include the descendants of the Hiong-Nu, known heretofore by the name of Huns, the Kalkas, the Kalmucks, and the Burats. It has been ascertained by late observations, that not only the inhabitants of Unalashka, but several tribes of South America, indicate, by the osteological characters of the head, a passage from the American to the Mongul race. When we shall have more completely studied the brown men of Africa, and that swarm of nations, who inhabit the interior and north-east of Asia, and who are vaguely described by systematic travellers under the name of Tartars and Tschoudes, the Caucasian, Mongul, American, Malay, and Negro races, will



appear less insulated, and we shall acknowledge, in this great family of the human race, one single organic type, modified by circumstances which perhaps will ever remain unknown.

Though the nations of the New Continent are connected by intimate ties, they exhibit, in the mobility of their features, in their complexions, tanned in a greater or less degree, and in their stature, a difference as remarkable as the Arabians, the Persians, and Sclavonians, who are all of the Caucasian race. The hordes who wander along the burning plains of the equinoctial regions have, however, no darker skins than the mountaineers of the temperate zone ; whether it be that in the human race, and in the greater part of animals, there is a certain period of organic life, beyond which the influence of climate and food have no effect, or that the deviation from the primitive type becomes apparent only after a long series of ages. Besides, every thing concurs to prove, that

the Americans, as well as the people of the Mongul race, have less flexibility of organization than the other nations of Asia and Europe.

The American race, though the least numerous of any, occupies the largest space on the Globe. It extends across both hemispheres, from sixty-eight degrees of northern, and fifty-five degrees of southern latitude. It is the only race, which has fixed its dwelling on the burning plains bounded by the ocean, as well as on the ridges of the mountains, where it roams over heights twelve hundred feet above that of the Peak of Teneriffe.

The number of languages, which distinguish the different native tribes, appears still more considerable in the New Continent than in Africa, where, according to the late researches of Messrs. Seetzen and Vater, there are above one hundred and forty. In this respect the whole of America resembles Caucasus, Italy before the conquest of the Romans, Asia Minor when

that country contained, on a small extent of territory, the Cicilians of Semitic race, the Phrygians of Thracian origin, the Lydians, and the Celts. The configuration of the soil, the strength of vegetation, the apprehensions of the mountaineers under the tropics of exposing themselves to the burning heat of the plains, are obstacles to communication, and contribute to the amazing variety of American dialects. This variety, it is observed, is more restrained in the savannahs and forests of the north, which are easily traversed by the hunter, on the banks of great rivers along the coast of the ocean, and in every country where the Incas had established their theocracy by the force of arms.

When it is asserted, that several hundred languages are found in a continent, the whole population of which is not equal to that of France, we regard as different those languages, which bear the same affinity to each other, I will not say as the German and the Dutch, or the Italian and the Spanish,



but as the Danish and the German, the Chaldean and the Arabic, the Greek and the Latin. In proportion as we penetrate into the labyrinth of American idioms, we discover, that several are susceptible of being classed by families, while a still greater number remain insulated, like the Biscayan among European, and the Japanese among Asiatic languages. This separation may, however, be only apparent; for we may presume that the languages, which seem to admit of no ethnographical classification, have some affinity, either with other languages which have been for a long time extinct, or with the idioms of nations which have never yet been visited by travellers.

The greater part of the American languages, even such as have the same difference with each other as the languages of Germanic origin, the Celtic and the Slavonian, bear a certain analogy in the whole of their organization: for instance, in the complication of grammatical forms, in the modification of the verb according to the

nature of its syntax, and in the number of additive particles (*affixa et suffixa*). This uniform tendency of the idioms betrays, if not a community of origin, at least a great analogy in the intellectual dispositions of the American tribes, from Greenland to the Magellanic regions.

Investigations made with the most scrupulous exactness, in following a method which had not hitherto been used in the study of etymologies, have proved, that there are a few words that are common in the vocabularies of the two continents. In eighty-three American languages, examined by Messrs. Barton and Vater, one hundred and seventy words have been found, the roots of which appear to be the same ; and it is easy to perceive, that this analogy is not accidental, since it does not rest merely on imitative harmony, or on that conformity in the organs, which produces almost a perfect identity in the first sounds articulated by children. Of these one hundred and seventy words, which have this con-

nexion with each other, three fifths resemble the Mantchou, the Tongouse, the Mongul, and the Samoyede; and two fifths the Celtic and Tschoud, the Biscayan, the Coptic, and the Congo languages. These words have been found by comparing the whole of the American languages with the whole of those of the Old World; for hitherto we are acquainted with no American idiom, which seems to have an exclusive correspondence with any of the Asiatic, African, or European tongues. What some learned writers have asserted from abstract theories, respecting the pretended poverty of all the American languages, and the extreme imperfection of their numerical system, is as doubtful as the assertions which have been made respecting the weakness and stupidity of the human race throughout the New Continent, the stunted growth of animated nature, and the degeneration of those animals, which have been transported from one hemisphere to the other.

Several idioms, which now form the lan-

guage of barbarous nations only, seem to be the wrecks of languages, once rich, flexible, and belonging to a more cultivated state. We shall not enter into the discussion, whether the primitive condition of the human race was rude and brutalized, or whether the savage hordes are descended from nations, whose intellectual faculties, and the languages which reflect those faculties, were equally developed; we shall only observe, that the little which we know of the history of the Americans tends to prove, that the tribes, whose migrations have been directed from the north to the south, while yet dwelling near the polar regions, used various idioms which we find at present under the torrid zone. From this we may by analogy conclude, that the ramification, or rather, to use a term independent of every system, the multiplicity of languages is a very ancient phenomenon. Perhaps those, which we call American, belong no more to America than the



Magyar or Hungarian, the Tschoud or Finlandish belongs to Europe.

We must admit, that the comparison between the idioms of the two continents has hitherto led to no important conclusion; but we may cherish the hope, that this study will become more productive, when a great number of materials shall be found, to exercise the sagacity of the learned. How many languages exist in America, and in central and eastern Asia, the mechanism of which is to us as much unknown as that of the Tyrhenian, the Oscan, and the Sabine! Among the nations who have disappeared in the Old World, there are perhaps several, of which a few scanty tribes are preserved in the vast solitudes of America.

If languages supply but feeble evidence of ancient communication between the two worlds, this communication is fully proved by the cosmogonies, the monuments, the hieroglyphics, and institutions

of the people of America and Asia. I flatter myself, that the following sheets will justify this assertion, by the addition of new evidence to that which has been long since admitted. I have carefully endeavoured to make a proper distinction between whatever indicates a community of origin, with what is the result of the analogous situation of nations, when they begin to improve their social state.

It has hitherto been impossible to ascertain the period, when the communication between the inhabitants of the two worlds took place; and how rash would be the attempt to point out the group of nations of the Old Continent, with which the Toltecks, the Aztecks, the Muyscas, and the Peruvians present the nearest analogies; since these analogies are apparent in the traditions, the monuments, and customs, which perhaps preceded the present division of Asia-tics into Chinese, Moguls, Hindoos, and Tungooses.

At the period of the discovery of the

New World, or rather when the first invasion of the Spaniards took place, the Americans, who had made the greatest progress in civilization, were the inhabitants of the mountains. Men, born in the plains under temperate climates, had followed the ridges of the Cordilleras, which rise in proportion as they approach the Equator. In these elevated regions they found the temperature and the plants, which were congenial with those of their native soil.

The faculties unfold themselves with more facility, wherever man, chained to a barren soil, compelled to struggle with the parsimony of nature, rises victorious from the lengthened contest. The arid mountains of Caucasus and central Asia are the refuges of free and barbarous nations. In the equinoxial parts of America, where savannahs, clothed in perpetual verdure, are suspended above the region of the clouds, no civilized nations exist but those embosomed in the Cordilleras. Their first

progress in the arts was as ancient as the singular form of their governments, which were unfavourable to individual liberty.

The New Continent, like that of Africa and Asia, presents several points of a primitive civilization, of which the mutual relations are as unknown as those of Meroe, Thibet, and China. The civilization of Mexico emanated from a country situate towards the north ; in South America, the great edifices of Tiahuanaco have served as models for the monuments which the Incas erected at Couzco. Amidst the extensive plains of upper Canada, in Florida, and in the deserts bordered by the Orinoco, the Cassiquiare, and the Guainia, dykes of a considerable length, weapons of brass, and sculptured stones, are indications that those very countries were formerly inhabited by industrious nations, which are now traversed only by tribes of savage hunters.

The unequal distribution of animals over the surface of the globe has had a considerable influence on the fate of nations, and



on their greater or less rapid progress toward civilization. In the Old Continent, the pastoral life formed the passage from hunting to agricultural nations. The ruminating animals, so easily reared under every climate, have followed the African negro, the Mogul, the Malay, and the hordes that dwell on Caucasus. Though several quadrupeds, and a greater number of the vegetable tribe, are common to the most northern regions of both worlds, America possesses, in the species of oxen, only the bison and the musk ox; two animals difficult to tame, and the females of which yield but little milk, notwithstanding the richness of the pasture. The American hunter was not led to agriculture by the care of flocks, and the habits of a pastoral life. The inhabitant of the Andes was never tempted to milk the lama, the alpaca, or the guanaco. Milk was formerly a nourishment unknown to the Americans, as well as to several nations of eastern Asia.

Never has the savage, freely roving through the forests of the temperate zone, been known to throw willingly aside the habits of the hunter, and embrace the stillness of agricultural life. This transition, which is the most difficult, and the most important in the history of human societies, can only be attained by the force of circumstances. When, in their distant migrations, hordes of hunters, expelled by other warlike hordes, reached the plains of the equinoctial zone, they were compelled by impenetrable forests and a luxuriant vegetation, to change their character and habits. There are countries between the Orinoco, the Ucajale, and the river of Amazons, where man finds no other space free than the rivers and the lakes. Rivetted to the soil on the banks of rivers, the most savage tribes encircle their huts with bananas, jatropha, and other alimentary plants.

No historical fact, no tradition connects the nations of South America with those

that inhabit the north of the Isthmus of Panama. The annals of the Mexican empire appear to go as far back as the sixth century of our era, since at that period we find the epochas of the migrations, the causes which produced them, the names of the chiefs descended from the illustrious house of Citin, who led, from the unknown regions of Aztlan and Teocolhuacan, the northern nations into the plains of Anahuac. The foundation of Tenochtillan, like that of Rome, goes back to the heroic ages ; and it is only from the twelfth century that the annals of the Aztecks, like those of the Chinese, and the people of Thibet, give an uninterrupted account of secular festivals, the genealogy of their kings, the tributes imposed on the conquered, the foundation of cities, celestial phenomena, the minutest events even which have influenced the state of societies in their infancy.

Though no traditions point out any direct connexion between the nations of

North and South America, their history is not less fraught with analogies in the political and religious revolutions, from which dates the civilization of the Aztecks, the Muyscas, and the Peruvians. Men with beards, and with clearer complexions than the natives of Anahuac, Cundinamarca, and the elevated plain of Couzco, make their appearance without any indication of the place of their birth ; and, bearing the title of high priests, of legislators, of the friends of peace, and the arts, which flourish under its auspices, operate a sudden change in the policy of the nations, who hail their arrival with veneration. Quetzalcoatl, Bochica, and Manco Capac, are the sacred names of these mysterious beings. Quetzalcoatl, clothed in a black, sacerdotal robe, comes from Panuco, from the shores of the Gulf of Mexico ; Bochica, the Boudha of the Muyscas, presents himself on the high plains of Bogota, where he arrives from the savannahs, which stretch along the east of the Cordilleras. The



history of these legislators, which I have endeavoured to unfold in this work, is intermixed with miracles, religious fictions, and with those characters which imply an allegorical meaning. Some learned men have pretended to discover, that these strangers were shipwrecked Europeans, or the descendants of those Scandinavians, who, in the eleventh century, visited Greenland, Newfoundland, and perhaps Nova Scotia ; but a slight reflection on the period of the Tolteck migrations, on the monastic institutions, the symbols of worship, the calendar, and the form of the monuments of Cholula, of Sogamozo, and of Couzco, leads us to conclude, that it was not in the north of Europe that Quetzalcoatl, Bochica, and Manco Capac framed their code of laws. Every consideration leads us rather towards Eastern Asia, to those nations who have been in contact with the inhabitants of Thibet, to the Shamanist Tartars, and the bearded Ainos of the isles of Jesso and Sachalin.

When I have employed in the course of these investigations the words, monuments of the New World, progress in the arts of drawing, intellectual culture, I have had no intention of supposing a state of things, which indicates what is called, somewhat vaguely, a highly advanced civilization. Nothing is more difficult than a comparison between nations, who have followed different roads in their progress towards social perfection. The Mexicans and Peruvians must not be judged according to the principles laid down in the history of those nations, which are the unceasing objects of our studies. They are as remote from the Greeks and the Romans, as they bear a near affinity to the Etruscans and the people of Thibet. Among the Peruvians, a theocratic government, while it favoured the growth of industry, the construction of public works, and whatever might be called general civilization, presented obstacles to the display of the faculties of the individual. Among the Greeks,

on the contrary, before the time of Pericles, this liberal and rapid progress of individual talents outstripped the tardy steps of general civilization. The empire of the Incas may be compared to some great monastic establishment, in which each member of the congregation was prescribed the duties he had to perform for the general good. When on the spot we study those Peruvians, who, through the lapse of ages, have preserved their national physiognomy, we learn to estimate, at its true value, the code of laws framed by Manco Capac, and the effects produced on morals and public happiness. We discern a general state of prosperity, contrasted with a small portion of private welfare ; more submissive resignation to the decrees of the sovereign, than patriotic love for the country ; passive obedience, without courage for bold enterprises ; a spirit of order, which regulated with minute precision the most indifferent actions, while no general views enlarged the mind, and no elevation of thought ennobled the charac-

ter. The most complicated political institutions recorded in the history of mankind had crushed the germe of personal liberty, and the founder of the empire of Couzco, in flattering himself with the power of forcing men to be happy, reduced them to the state of mere machines. The Peruvian theocracy was, no doubt, less oppressive than the government of the Mexican kings; yet both contributed to give the monuments, the rites, and the mythology of the two nations, that dark and melancholy aspect, which forms a striking contrast with the elegant arts and soothing fictions of the people of Greece.

*Paris, April the 12th, 1813.*





Monuments of America,  
AND  
PICTURESQUE VIEWS  
OF THE  
*CORDILLERAS.*

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THE monuments of nations, from which we are separated by a long interval of ages, are calculated to fix our attention in two distinct points of view. The works of art, belonging to a people highly advanced in civilization, excite our admiration by the harmony and beauty of their forms, and by the genius with which they are conceived. The bust of Alexander, found in the garden of the Piseos, would be esteemed a valuable relic of antiquity, although no inscription indicated the features of the conqueror of Arbela. An engraved stone, or a medal of the

polished ages of Greece, interests the lovers of the arts by the severity of the style, or by its finished execution, although no legend or monogram connects these objects with any particular point of history. Such is the privilege of the marvels of genius, which were produced in the climes of Asia Minor, and in part of the south of Europe.

The monuments of those nations, on the contrary, which have attained no high degree of intellectual cultivation, which either from religious or political causes, or the nature of their organization, have never been affected by the beauty of forms, can be considered only as memorials of history. To this class belong the remains of sculpture, scattered over the vast countries which extend from the banks of the Euphrates to the eastern shores of Asia. The idols of Thibet and Hindostan, those which have been discovered on the central plains of Mongolia, are calculated to throw light on the ancient communication of nations with each other, and on the common origin of their mythological traditions.

The rudest works, the most grotesque forms, those masses of sculptured rocks, venerable only from their enormous magnitude, and their remote antiquity; those lofty pyramids, which indicate the multitudes employed in their construc-

tion ; are all connected with the philosophical study of history. By the same connection, the feeble remains of the skill, or rather industry, of the nations of the New Continent become worthy of our attention. Influenced by this persuasion, I have, in the course of my travels, brought together whatever objects I have been able, by unwearied research, to discover in the countries, where intolerance in those ages of barbarism left scarcely any vestige of the manners and religious rites of their ancient inhabitants ; when edifices and temples were demolished for the stones with which they were erected, or the hidden treasures they were supposed to contain.

The comparative view which I shall take of the works of art belonging to Peru and Mexico, and those of the ancient world, will give some interest to my researches, as well as to the Picturesque Atlas, which will contain the result of my investigations. Biassed by no system, I shall point out those analogies that naturally present themselves, distinguishing such as seem to prove an indentity of race, from such as perhaps depend only on internal causes, on the resemblance of all nations in the display of their intellectual faculties. I shall here confine myself to a succinct description of the objects represented in the engravings. The consequences which seem to result from the comparative view of these mo-



numents can be discussed only in the narrative of my journey ; since, as the nations to whom these edifices and sculptures are attributed still exist, their character, and the knowledge of their manners, will throw light on the history of their migrations.

Investigations of monuments erected by half-civilized nations have another kind of interest, which we may call psychological ; presenting to us a picture of the uniform progress of the human mind. The works of the first inhabitants of Mexico hold an intermediary place between those of the Scythian tribes, and the ancient monuments of Hindostan. What a striking spectacle does human genius present, when we survey the immense disparity, that separates the tombs of Tinian and the statues of Easter Island from the monuments of the Mexican temple of Mitla ; and compare the shapeless idols of this temple with the masterpieces of the chisel of Praxiteles or Lysippus !

But we shall cease to wonder at the rude style or incorrect expression of the monuments of the nations of America, when we reflect, that, cut off from the rest of mankind, wanderers in a country where man must have long struggled against Nature in her most savage and disordered aspect, these tribes, with no resources but in their own energy, could only emerge with tardy

progress from their native barbarism. The east of Asia, the west and the north of Europe, present the same phenomena. In pointing them out, I shall not pretend to investigate from what hidden causes the germe of the fine arts grew and spread only over a very small part of the Globe. How many nations of the ancient world lived in a climate equal with that of Greece, and surrounded with every object that elevates the imagination, without awakening to that sensibility of the perfection of forms, the peculiar privilege of the Greeks, to whose creative genius belong all that the arts possess of beautiful and sublime !

These considerations are sufficient to explain my intentions in the publication of these fragments of American monuments. Their study may become useful, like that of the most imperfect languages ; which are interesting, not only by their analogy with those that are known, but still more by the strict connection, which exists between their structure and the degree of intelligence in man, when more or less remote from civilization.

Presenting in the same work the rude monuments of the indigenous tribes of America, and the picturesque views of the mountainous countries which they inhabited, my intention is to

connect objects, the relation of which to each other has not escaped the sagacity of those, who apply themselves to the philosophical study of the human mind. Although the manners of a people, the display of their intellectual faculties, the peculiar character stamped on their works, depend on a great number of causes which are not merely local, it is nevertheless true, that the climate, the nature of the soil, the physiognomy of the plants, the view of beautiful or of savage nature, have great influence on the progress of the arts, and on the style which distinguishes their productions. This influence becomes the more perceptible, the farther man is removed from civilization. What a contrast between the architecture of a tribe that has dwelt in vast and gloomy caverns, and that of hordes whose bold monuments recall in the shafts of their columns the towering trunks of the palm trees of the desert! An accurate knowledge of the origin of the arts can be acquired only from studying the nature of the site where they arose. The only American tribes, among whom we find remarkable monuments, are the inhabitants of mountains. Insolated in the region of the clouds, on the most elevated plains of the Globe, surrounded by volcanoes, the craters of which are encircled by eternal snows, they appear to have

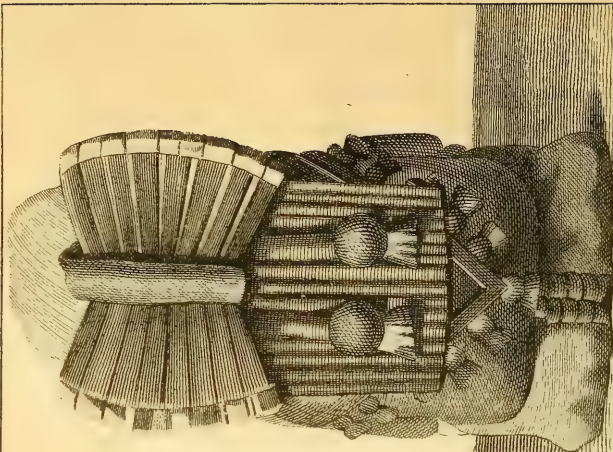
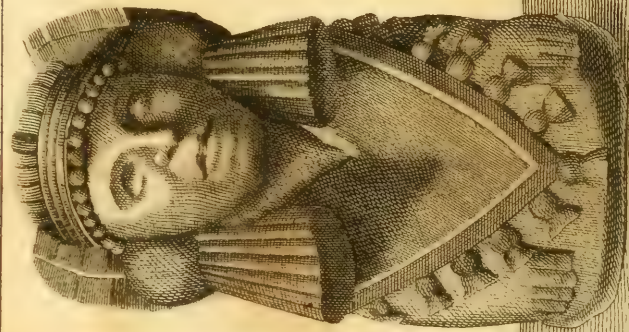
admired, in the solitude of their deserts, those objects only which strike the imagination by the greatness of their masses ; and their productions bear the stamp of the savage nature of the Cordilleras.

A part of this Atlas is appropriated to sketches of the great scenes of this savage nature. I have been less studious to delineate those, which produce only a picturesque effect, than to give an exact representation of the shapes of the mountains, the vallies by which their sides are furrowed, and the tremendous cascades formed by the fall of their torrents. The Andes bear the same proportion to the chain of the Alps, as these to the chain of the Pyrenees. Whatever I have beheld of picturesque or awful on the borders of the Saverne, in the north of Germany, on the Euganean mountains, the central chain of Europe, or the rapid declivity of the peak of Teneriffe, I have found all assembled in the Cordilleras of the New World. It would require ages to observe these beauties, and discover the wonders which nature has lavished over an extent of two thousand five hundred leagues, from the granitic mountains of the Strait of Magellan to the coasts bordering on the east of Asia. I shall think I have accomplished my purpose, if the feeble sketches con-



tained in this work should lead other travellers, friends of the arts, to visit the regions which I traversed, and to retrace accurately those stupendous scenes, to which the Old Continent offers no resemblance.





*Statue of an Agypt Priest.*

STATUE  
OF  
AN AZTECK PRIESTESS.

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PLATES I. & II.

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I HAVE placed at the head of my Picturesque Atlas a valuable relic of Mexican sculpture; a statue in basalt, preserved at Mexico in the cabinet of a distinguished lover of the arts, M. Dupé, captain in the service of his catholic majesty. This well-informed officer, who in early life improved his taste for the fine arts by a residence in Italy, has made several excursions through New Spain, to investigate the Mexican monuments. He has sketched with great accuracy the reliefs of the pyramid of Papantla, on which he intended to publish a very curious work.

The statue, of which both sides are here represented in their natural size \*, is chiefly re-

\* See the French edition in folio, Plates I and II



markable for a kind of headdress, somewhat resembling the veil or calantica of the heads of Isis, the Sphinxes, Antinoüs, and a great number of other Egyptian statues. It must nevertheless be observed, that, in the Egyptian veil, the two ends, which fall below the ears, are generally very scanty and cross folded. In several statues of the God Apis, in the Museum of the Capitol, the ends are convex in the front, and plaited lengthways, while the back part, that which touches the neck, is constantly flat, and not rounded as in the Mexican headdress. That the greatest analogy exists between this headdress and the plaited drapery, that encircles the heads incrustated on the pillars of Tentyra, is evident from the accurate drawings, which M. Denon has given in his *Travels in Egypt*.

Perhaps the fluted pads, which in the Mexican statue extend towards the shoulders, are masses of hair, like the tresses in a statue of Isis, of Greek workmanship, placed in the library of the Villa Ludovisi at Rome. This singular arrangement of the hair is particularly striking on the reverse of the statue, engraved on the second plate, which presents an enormous bag tied in the middle by a knot. The celebrated Zoega, of whom the fine arts have lately been deprived by death, assured me, that he had seen a bag of exactly the same form on a small statue of Osiris in bronze, in the Museum of Cardinal Borgia,

at Veletri. The forehead of the Mexican priestess is ornamented with a string of pearls on the edge of a narrow fillet. These pearls, which have never been observed on any Egyptian statue, indicate the communications which existed between the city of Tenochtitlan, ancient Mexico, and the coast of California, where pearls are fished up in great numbers. The neck is covered with a three cornered handkerchief, to which hang twenty-two little balls, or tassels, placed with great symmetry. These tassels, as well as the headdress, are found on a great number of Mexican statues, or bas-reliefs, and in hieroglyphical paintings, and remind us of the small apples and pomegranates on the robes of the high priest of the Hebrews.

On the front of the statue, and half a decimetre \* from its basis, the toes of the feet are seen on each side, but there are no hands, which indicates the infancy of the art. It seems, from the back front, that the figure is seated, or rather squat; and it is singular, that the eyes in this figure are without eye-balls, which are indicated in the bas-reliefs lately discovered at Oaxaca. The basalt of this sculpture is very hard, and of a fine black; it is the true basalt, with a few grains of peridot, and not Lydian

\* For the correspondence of English with French measures, see the table at the end of the volume.

stone, or porphyry with basis of greenstone, which antiquaries commonly call Egyptian basalt. The folds of the headdress, and especially the pearls, are highly finished; though the artist, destitute of a steel chisel, and with no tools perhaps but those of copper mixed with tin, such as I have brought from Peru, must have encountered great difficulties in the execution.

This statue has been very accurately drawn, under the inspection of M. Dupé, by a student of the Academy of Painting at Mexico. It is 0·38 of a metre in height, and 0·19 in breadth. I have adopted the denomination of the statue of a priestess, the title which it bears in the country. It may nevertheless represent some Mexican divinity, and have been originally classed among the household gods. The headdress and pearls found on an idol discovered in the ruins of Tezcucó, and which I deposited in the cabinet of the King of Prussia, at Berlin, give authority to this conjecture. The ornament of the neck, and the natural form of the head, render it more probable, that the statue represents simply an Aztec woman. On this last supposition, the fluted pads, which extend toward the breast, cannot be tresses; since the virgins, who devoted themselves to the service of the temple, were shorn by the high priest, or tepanteohuatzin.

A slight resemblance between the calantica of the heads of Isis, and the Mexican headdress ; the pyramids with terrasses, like those of Fayoum, and of Sakharah ; the frequent use of hieroglyphical painting ; the five complementary days added to the end of the Mexican year, similar to the epagomena of the Memphian year ; exhibit very remarkable points of comparison between the people of the Old and the New Continent. We are nevertheless very far from indulging in hypotheses, which would be as vague and uncertain as those which make the Chinese a colony from Egypt, and the Biscayan language a dialect of the Hebrew. These analogies for the most part disappear, when the facts are examined separately. The Mexican year, for instance, notwithstanding the epagomena, differs entirely from that of the Egyptians. An illustrious geometrician \*, who examined the fragments which I brought to Europe, found by the Mexican intercalation, that the duration of the tropical year of the Aztecks is almost identical with the duration found by the astronomers of Almamon.

If we go back to the early ages, history marks several central points of civilization, of the mutual relations of which we are ignorant ; such

\* La Place, Exposition du Système du Monde, 3<sup>e</sup> ed. p. 554.



as Meroe, Egypt, the banks of the Euphrates, Hindostan, and China. The elevated plains of Central Asia have no doubt given birth to systems of knowledge still more remote, and perhaps to the reflection of that light we may be led to attribute the commencement of American civilization.

VIEW  
OF THE  
GREAT SQUARE OF MEXICO.

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PLATE III.

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THE city of Tenochtitlan, the capital of Anahuac, founded in the year 1325, on a small group of islands, situate on the western part of the salt lake of Tezcuco, was totally destroyed during the siege carried on by the Spaniards in 1521, which lasted seventy-five days. The new city, which contains nearly 140,000 inhabitants, was rebuilt by Cortez on the ruins of the old. The streets were ranged in the same lines, but the canals, which crossed the streets, were filled up by degrees; and Mexico, greatly embellished by the Viceroy, count of Revillagigedo, may at present vie with the finest towns of Europe. The great square, represented in the third plate, is the spot on which formerly stood the spacious temple of Mexitli; which, like all the *teocalli*, or houses of the Mexican divinities, was a pyra-

midal edifice, resembling the Babylonian monument dedicated to Jupiter Belus. The palace of the Viceroy of New Spain is on the right ; a building of simple architecture, belonging originally to the family of Cortez, which is that of the Marquis del Valle de Oaxaca, Duke of Monteleone. In the middle of the engraving is the cathedral, part of which (*el sagrario*) is in the ancient Indian or Moorish style, vulgarly called Gothic. Behind the cupola of the *sagrario*, at the corner of the street *Del Indio Triste* and that of *Tacuba*, stood formerly the palace of the King of *Axajacatl*, where Montezuma lodged the Spaniards on their arrival at *Tenochtitlan*. The palace of Montezuma was on the right of the cathedral, opposite that of the present Viceroy. It appears to me useful to point out these localities, since they may be interesting to those, who study the history of the conquest of Mexico.

The *Plaza Mayor*, which must not be confounded with the great market of *Tlatelolco*, described by Cortez in his letters to the Emperor Charles the Fifth, is ornamented, since 1803, with the equestrian statue of Charles the Fourth, executed at the expense of the Viceroy, the Marquis of Branciforte. This statue of bronze is in the purest style, and highly finished ; it was drawn, modelled, cast, and erected by the same artist, Don Manuel Tolsa, a native of Valentia in Spain, and director of the class of sculpture in

the academy of the fine arts at Mexico. We know not which most to admire, the talents of this artist, or the courage and perseverance which he displayed in a country where every thing was to be created, and numberless obstacles to be surmounted. This capital work succeeded on the first cast. The statue weighs nearly twenty-three thousand kilogrammes, and it is two decimetres higher than the equestrian statue of Lewis the fourteenth, which stood in the place Vendome at Paris. The artist had the good taste not to gild the horse, which is simply coated with a brownish olive varnish. As the buildings around the square are in general not lofty, the sky forms the back ground to the statue; a circumstance which, on the ridge of the Cordilleras, where the atmosphere is of a deep blue, produces a very picturesque effect. I was at Mexico when this enormous mass was removed from the foundery to the Plaza Mayor, a distance of about sixteen hundred metres, which it took five days to accomplish. The means employed by Mr. Tolsa to raise it on a pedestal of a beautiful Mexican marble were very ingenious, and would deserve a minute description.

The great square of Mexico is at present of an irregular form, since that which contains the shops of the Parian has been built within it, contrary to the plan of Cortez. To correct the appearance of this irregularity, it has been thought



necessary, to place the equestrian statue, which the Indians call *the great horse*, in a particular enclosure, paved with large slabs of porphyry, and raised more than fifteen decimetres above the level of the adjacent streets. The oval, the great axis of which is a hundred metres, is encircled by four fountains, and closed, to the great discontent of the natives, by four gates, the bars of which are ornamented in bronze. The engraving is a faithful copy of a drawing on a larger scale by Mr. Ximeno, a distinguished artist, and director of the class of painting in the academy of Mexico. The figures in the drawing placed beyond the enclosure, are in the dress of the Guachinangoes, or lower class of the Mexican people \*.

\* See my Political Essay on the Kingdom of New-Spain, French edition, pages 119, 168, 177, and 186.

## NATURAL BRIDGES

OF

*ICONONZO.*

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PLATE IV.

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AMIDST the majestic and varied scenery of the Cordilleras, the vallies most powerfully affect the imagination of the European traveller. The stupendous height of the mountains can be discerned only at a considerable distance, and from the low lands which extend along the coasts to the foot of the central chain. The elevated plains, which encircle the summits of these mountains covered with perpetual snow, are for the most part from two thousand five hundred to three thousand metres above the level of the ocean. This circumstance weakens in some measure the effect produced by the colossal masses of Chimborazo, Cotopaxi, and Antisana, viewed from the lofty plains of Riobamba and Quito : while, on the contrary, the vallies of the Cordilleras, deeper and narrower than those of

the Alps and the Pyrenees, present scenes of the wildest aspect, and fill the soul with astonishment and terror. These vallies are crevices, the sides and bottom of which are clothed with vigorous vegetation; and the depth in many parts is so great, that were Vesuvius and the Puy de Dome seated in these abysses, their summits would not exceed the ridge of the nearest mountains. M. Ramond's interesting travels have made us acquainted with the valley of Ordesa, which descends from Mount Perdu, and the mean depth of which is nearly nine hundred metres (four hundred and fifty-nine toises). In travelling on the ridge of the Andes, from Pasto to the town of Ibarra, and descending from Loxa to the banks of the river of Amazons, M. Bonpland and myself traversed the well-known crevices of Chota and Cutaco, which on measuring I found to be, one fifteen hundred, and the other thirteen hundred metres in perpendicular depth. To give a more complete idea of the grandeur of these geological phenomena, it must be remarked, that the bottom of these crevices is only a fourth part less elevated above the level of the sea, than the passages of St. Gothard and Mount Cenis. The valley of Icononzo, or Pandi, part of which is represented in the fourth plate, is less remarkable for its dimensions, than for the singular form of its rocks, which seem to have been carved by the hand of

man. Their naked and barren summits present the most picturesque contrast with the tufts of trees and shrubs, which cover the brinks of the crevice. The small torrent, which has made itself a passage through the valley of Icononzo, is called Rio de la Summa Paz, and falls from the eastern chain of the Andes, which, in the kingdom of New Grenada, divides the basin of the river Magdalena from the vast plains of the Meta, the Guaviare, and the Orinoco. This torrent confined in a bed almost inaccessible, could not have been crossed but with extreme difficulty, if nature had not provided two bridges of rocks, which are justly considered in the country as among the objects most worthy the attention of travellers. In the month of September, 1801, we passed these natural bridges of Icononzo, on our journey from Santa Fé de Bogota to Popayan and Quito.

The name of Icononzo is that of an ancient village of the Muysco Indians, situate at the southern extremity of the valley, of which only a few scattered huts now remain. The nearest inhabited place to this remarkable spot is the small village of Pandi, or Mercadillo, at the distance of a quarter of a league toward the north-east. The road from Santa Fé to Fusagasuga, (lat.  $4^{\circ} 20' 21''$  north ; long.  $5^h 7' 14''$ ), and thence to Pandi, is one of the most difficult and least frequented to be found in the Cordil-

leras. The traveller must feel a passionate enthusiasm for the beauties of nature, who prefers the dangerous descent of the desert of San Fortunato, and the mountains of Fusagasuga, leading towards the natural bridges of Icononzo, to the usual road from the elevated plain of Bogota, by the Mesa de Juan Diaz to the banks of the Magdalena.

The deep crevice through which rushes the torrent of the Summa Paz, is in the centre of the valley of Pandi. Near the bridge the waters keep their direction from east to west, during a length of four thousand metres. The river forms two beautiful cascades at the point where it enters the crevice on the west of Doa, and where it escapes in its descent towards Melgar. This crevice was probably formed by an earthquake, and resembles an enormous vein, from which the mineral substance has been extracted by the labor of miners. The neighbouring mountains are of gritstone, with a clay cement ; this formation, which reposes on the primitive schists (thonschiefer) of Villeta, extends from the mountain of rock salt of Zipaquira to the basin of the river Magdalena. This mountain contains also the strata of coal of Canoas, or Chipa, which are worked near the great fall of Tequendama \*.

In the valley of Icononzo, the gritstone (*sand-*

\* See Plate VI, French folio edition.



*stein*) is composed of two distinct rocks ; one, extremely compact and quartzose, with a small portion of cement, and scarcely any fissures of stratification, lies on a schistose gritstone (*sandsteinschiefer*), with a fine grain, and divided into an infinite number of small strata, extremely thin, and almost horizontal. It is probable, that the compact and quartzose stratum, when the crevice was formed, resisted the shock which rent these mountains ; and that it is the continuity of this stratum, which serves as a bridge to cross from one side of this valley to the other. This natural arch is fourteen metres and a half in length, and twelve metres seven decimetres in breadth : its thickness in the centre is two metres four decimetres. Experiments carefully made on the fall of bodies, and with a chronometer by Berthoud, gave us ninety-seven metres seven decimetres for the height of the upper bridge above the level of the waters of the torrent. A well informed person, who has an agreeable country residence in the beautiful valley of Fusagasaga, Don Jorge Lozano, had already measured this height with a line, and found it to be one hundred and twelve varas ( $93.4^m$ ) ; the mean depth of the torrent appears to be about six metres. The Indians of Pandi have formed, for the safety of travellers, who, however, seldom visit this desert country, a

small balustrade of reeds, which extends along the road leading to the upper bridge.

Sixty feet below this natural bridge is another, to which we are led by a narrow pathway, which descends upon the brink of the crevice. Three enormous masses of rock are fallen so as to support each other. That in the middle forms the key of the arch; an accident which might have given the natives the idea of arches in masonry, unknown to the people of the new world, as well as to the ancient inhabitants of Egypt. I shall not decide the question whether these masses of rock have been projected from a great distance, or whether they are the fragments of an arch broken on the spot, but originally like the upper natural bridge. The latter conjecture seems probable, from a similar event which happened to the Coliseum at Rome, where, in a half ruined wall, several stones were stopped in their descent, because in falling they accidentally formed an arch.

In the middle of the second bridge of Iconzo is a hollow of more than eight metres square, through which the bottom of the abyss is perceived. We there made our experiments on the fall of bodies. The torrent seems to flow through a dark cavern, whence arises a lugubrious noise, caused by the numberless flights of nocturnal birds that haunt the crevice, and

which we were led at first to mistake for those bats of gigantic size so well known in the equinoctial regions. Thousands of them are seen flying over the surface of the water. The Indians assured us, that these birds are of the size of a fowl, with a curved beak and an owl's eye. They are called *cacas*; and the uniform colour of their plumage, which is a brownish gray, leads me to think, that they belong to the genus of the *caprimulgus*, the species of which are so various in the Cordilleras. It is impossible to catch them, on account of the depth of the valley; and they can be examined only by throwing down rockets to illumine the sides of the crevice.

The height of the natural bridge of Icononzo above the ocean is eight hundred and ninety-three metres. A phenomenon, similar to the upper bridge, of which we have just given the description, exists in the mountains of Virginia, in the county of Rockbridge. This Mr. Jefferson has examined with an attention, that distinguishes all the observations of that excellent naturalist \*. The natural bridge of Cedar Creek in Virginia is a calcareous arch of twenty-seven metres at its opening; its height above the waters of the river is seventy metres.

The earthen bridge (*Rumichaca*), which we found on the declivity of the porphyritic moun-

\* Notes on Virginia, p. 56.

tains of Chumban, in the province of Los Pastos; the bridge of Madre de Dios, called Danto, near Totonilco, in Mexico; the pierced rock near Grandola, in the province of Alentejo, in Portugal; are geological phenomena, which bear some resemblance to the bridge of Icononzo: but I doubt whether in any part of the Globe a phenomenon has been discovered so extraordinary as that of the three masses of rocks, which support each other by forming a natural arch.

I sketched the natural bridges of Icononzo from the northern part of the valley, with a side view of the arch. The first proofs of this plate indicate erroneously Mr. Gmelin of Rome as the engraver, instead of M. Bouquet of Paris.

## PASSAGE OF QUINDIU,

IN THE

### *CORDILLERA OF THE ANDES.*

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PLATE V.

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IN the kingdom of New Grenada, from  $2^{\circ} 30'$  to  $5^{\circ} 15'$  of northern latitude, the Cordillera of the Andes is divided into three parallel chains, of which the two lateral only are covered at very considerable heights with gritstone, and other secondary formations. The eastern chain divides the valley of the river Magdalena from the plains of Rio Meta. The natural bridges of Icononzo, of which we have just given the description, are situate on its western declivity. Its highest summits are the Paramo de la Summa Paz, and that of Chingasa. Neither of these attains the region of perpetual snows. The central chain divides the waters between the basin of the river Magdalena and that of Rio Cauca. It often attains the limits of the perpetual snows, and greatly surpasses it in the



colossal summits of Guanacas, Baragan, and Quindiu. At the rising and setting of the Sun, this central chain offers a magnificent spectacle to the inhabitants of Santa Fé; and reminds us, though on a much more stupendous scale, of the view of the Alps in Switzerland.

The western chain of the Andes separates the valley of Cauca from the province of Choco, and the coasts of the South Sea. Its elevation is scarcely fifteen hundred metres: it sinks so low between the sources of the Rio Atrato, and those of Rio San-Juan, that we can scarcely follow its course into the isthmus of Panama.

These three chains of mountains are blended together in the sixth and seventh degrees of north latitude. They form a single group to the south of Popayan, in the province of Pasto. We must not, however, confound them with the division of the Cordilleras observed by Bouguer and La Condamine in the kingdom of Quito, from the equator to the second degree of south latitude.

The city of Santa Fé de Bogota is situate on the west of the Paramo of Chingasa, in an elevated plain, which is two thousand six hundred and fifty metres above the level of the sea, and which extends to the ridge of the eastern Cordilleras. This particular structure of the Andes obliges the traveller from Santa Fé to Popayan and the banks of the Cauca, to descend the

eastern chain, either by the Mesa and Tocayma, or the natural bridges of Icononzo, traverse the valley of the river Magdalena, and cross the central chain. The most frequented passage is that of the Paramo de Guanacas, described by Bouguer, on his return from Quito to Carthage. Pursuing this road the traveller crosses the ridge of the central Cordilleras in a single day, and amidst an inhabited country. We preferred the passage of the mountain of Quindiu, or Quindio, between the cities of Ibague and Carthago, the entrance of which passage is represented in the fifth plate\*. These geographical explanations seemed necessary to give a clear idea of the position of a place, which is not to be found in the most accurate charts of South America, even in that of La Cruz.

The mountain of Quindiu, (lat.  $4^{\circ} 36'$ , long.  $5^{\text{h}}12'$ ) is considered as the most difficult passage in the Cordilleras of the Andes. It is a thick uninhabited forest, which in the finest season cannot be traversed in less than ten or twelve days. Not even a hut is to be seen, nor can any means of subsistence be found. Travellers at all times of the year furnish themselves with a month's provision, since it often happens, that by the melting of the snows, and the sudden

\* See Plate V, folio edition.

swell of the torrents, they find themselves so circumstanced, that they can descend neither on the side of Carthago, nor that of Ibague. The highest point of the road, the Garito del Paramo, is three thousand five hundred and five metres above the level of the sea. As the foot of the mountain, towards the banks of the Cauca, is only nine hundred and sixty metres, the climate there is in general mild and temperate. The pathway, which forms the passage of the Cordilleras, is only three or four decimetres in breadth, and has the appearance in several places of a gallery dug, and left open to the sky. In this part of the Andes, as almost in every other, the rock is covered with a thick stratum of clay. The streamlets, which flow down the mountains, have hollowed out gullies six or seven metres deep. Along these crevices, which are full of mud, the traveller is forced to grope his passage; the darkness of which is increased by the thick vegetation, that covers the opening above. The oxen, which are the beasts of burden commonly made use of in this country, can scarcely force their way through these galleries, some of which are two thousand metres in length; and if perchance the traveller meets them in one of these passages he finds no means of avoiding them, but by turning back, and climbing the earthen wall, which borders the crevice, and keeping

himself suspended, by laying hold of the roots, which penetrate to this depth from the surface of the ground.

We traversed the mountain of Quindiu in the month of October, 1801, on foot, followed by twelve oxen, which carried our collections and instruments, amidst a deluge of rain, to which we were exposed during the last three or four days, in our descent on the western side of the Cordilleras. The road passes through a country full of bogs, and covered with bamboos. Our shoes were so torn by the prickles, which shoot out from the roots of these gigantic graminæ, that we were forced like all other travellers, who dislike being carried on men's backs to go barefooted. This circumstance, the continual humidity, the length of the passage, the muscular force required to tread in a thick and muddy clay, the necessity of fording deep torrents of icy water, render this journey extremely fatiguing : but, however painful, it is accompanied by none of those dangers, with which the credulity of the people alarm travellers. The road is narrow, but the places where it skirts precipices are very rare. As the oxen are accustomed to put their feet in the same tracks, they form small furrows across the road, separated from each other by narrow ridges of earth. In very rainy seasons, these ridges are covered by water, which renders the traveller's step

doubly uncertain, since he knows not whether he places his foot on the ridge, or in the furrow. As few persons in easy circumstances travel on foot, in these climates, through roads so difficult, during fifteen or twenty days together, they are carried by men in a chair, tied on their back ; for in the present state of the passage of Quindiu, it would be impossible to go on mules. They talk in this country of going on a man's back (*andar en carguero*), as we mention going on horse-back, no humiliating idea is annexed to the trade of *cargueros* ; and the men who follow this occupation are not Indians, but mulattoes, and sometimes even whites. It is often curious to hear these men, with scarcely any covering, and following a profession which we should consider so disgraceful, quarrelling in the midst of a forest, because one has refused the other, who pretends to have a whiter skin, the pompous title of *don*, or of *su merced*. The usual load of a *carguero* is six or seven arrobas (from seventy-five to eighty-eight kilogrammes \*) : those who are very strong, carry as much as nine arrobas. When we reflect on the enormous fatigue, to which these miserable men are exposed, journeying eight or nine hours a day over a mountainous country ; when we know, that their

\* For the correspondent English and French weights, see the table at the end of the volume.



backs are sometimes as raw as those of beasts of burden, and that travellers have often the cruelty to leave them in the forests, when they fall sick ; that they earn by a journey from Ibague to Carthago only twelve or fourteen piastres (sixty or seventy francs) in a space of fifteen, and sometimes even twenty-five or thirty days ; we are at a loss to conceive, how this employment of a carguero, one of the most painful which can be undertaken by man, is eagerly embraced by all the robust young men, who live at the foot of the mountains. The taste for a wandering and vagabond life, the idea of a certain independence amidst forests, leads them to prefer this employment to the sedentary and monotonous labour of cities.

The passage of the mountain of Quindiu is not the only part of South America, which is traversed on the backs of men. The whole of the province of Antioquia is surrounded by mountains so difficult to pass, that they who dislike entrusting themselves to the skill of a carrier, and who are not strong enough to travel on foot from Santa Fé de Antioquia to Bocca de Nares, or Rio Samana, must relinquish all thoughts of leaving the country. I was acquainted with an inhabitant of this province, so immensely bulky, that he had not met with more than two mulattoes capable of carrying him ; and it would have been impossible for him

to return home, if these two carriers had died, while he was on the banks of the Magdalena, at Mompox or Honda. The number of young men, who undertake the employment of beasts of burden at Choco, Ibague, and Medellin, is so considerable, that we sometimes met a file of fifty or sixty. A few years ago, when a project was formed to make the passage from Nares to Antioquia passable for mules, the cargueroes presented formal remonstrances against mending the road, and the government was weak enough to yield to their clamours. We may here observe, that a class of men near the mines of Mexico have no other employment, than that of carrying other men on their backs. In these climates the indolence of the whites is so great, that every director of a mine has one or two Indians at his service, who are called his horses (cavallitoes), because they are saddled every morning, and, supported by a small cane, and bending forwards, they carry their master from one part of the mine to another. Among the cavallitoes, or cargueroes, those who have a sure foot and easy step are known and recommended to travellers. It is distressing to hear the qualities of man spoken of in terms, by which we are accustomed to denote the gait of mules and horses. The persons who are carried in a chair by a carguero must remain several hours motionless, and leaning backwards ; the least mo-

tion is sufficient to throw down the carrier, and his fall would be so much the more dangerous, as the carguero, too confident in his skill, chooses the most rapid declivities, or crosses a torrent on a narrow and slippery trunk of a tree. These accidents are however rare, and those which happen must be attributed to the imprudence of travellers, who, frightened at a false step of the carguero, leap down from their chairs.

The fifth plate represents a very picturesque view, seen at the entrance of the mountain of Quindiu, near Ibague, at a post called the foot of the Cuesta. The truncated cone of Tolima, covered with perpetual snow, and reminding us by its form of Cotopaxi and Cayambe, appears above the mass of granitic rocks. The small river of Combeima, which mingles its waters with those of Rio Cuello, winds in a narrow valley, and forces its way across a thicket of palm trees. A part of the town of Ibague, the great valley of the river Magdalena, and the eastern chain of the Andes, are seen in the back ground. In the fore ground is a band of cargueroes coming up the mountain, representing the mode of fastening on the shoulders the chair made of bamboo wood, which is steadied by a headstall similar to that worn by horses and oxen. The roll in the hand of the third carguero is the roof, or rather movable house,

which is to shelter the travellers who cross the forests of Quindiu. When they search Ibaguë, and prepare for the journey, they pluck in the neighbouring mountains several hundred leaves of the vijao, a plant of the family of the bananas, which forms a genus approaching the thalia, and which must not be confounded with the heliconia bihai. These leaves, which are membranous and silky, like those of the musa, are of an oval form, fifty-four centimetres (twenty inches) long, and thirty-seven centimetres (fourteen inches) in breadth. Their lower surface is a silvery white, and covered with a farinaceous substance, which falls off in scales. This peculiar varnish enables them to resist the rain during a long time. In gathering these leaves, an incision is made in the middle rib, which is the continuation of the foot-stalk; and this serves as a hook to suspend them, when the movable roof is formed. On taking it down, they are spread out and carefully rolled up in a cylindrical bundle. It requires about a hundred weight of leaves (50 kilogrammes) to cover a hut large enough to hold six or eight persons. When the travellers reach a spot in the midst of the forests, where the ground is dry, and where they propose to pass the night, the cargueros lop a few branches from the trees, with which they make a tent. In a few minutes this slight timber work is divided into squares by the stalks of

some climbing plant, or threads of the agave, placed in parallel lines three or four decimetres from each other. The vijao leaves meanwhile have been unrolled, and are now spread over the above work, so as to cover each other like the tiles of a house. These huts thus hastily built, are cool and commodious. If during the night the traveller feels the rain, he points out the spot where it enters, and a single leaf is sufficient to obviate the inconvenience. We passed several days in the valley of Boquia under one of these leafy tents, which was perfectly dry amidst violent and incessant rains.

The mountain of Quindiu is one of the richest spots in useful and interesting plants. Here we found the palm-tree (*ceroxylon andicola*), the trunk of which is covered with vegetable wax ; the *passiflora* in trees ; and the majestic *mutisia grandiflora*, with flowers of a scarlet colour sixteen centimetres (six inches long).



## FALL OF THE TEQUENDAMA.

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### PLATE VI.

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THE elevated plain, on which stands the city of Santa Fé de Bogota, resembles in a variety of circumstances that which is surrounded by the Mexican lakes. Each of these plains is higher than the summit of St. Bernard, the first being two thousand six hundred and sixty, and the second two thousand two hundred and seventy-seven metres above the level of the ocean. The valley of Mexico is bounded by a circular wall of mountains of porphyry, and its centre is covered with water: for the numerous torrents, which rush into the valley, found no outlet, until the Europeans had dug the canal of Huehuetoca. The plain of Bogota is also encircled by lofty mountains; and the perfect level of the soil, its geological structure, the form of the rocks of Suba and Facatativa, which rise like small islands in the midst of the savannahs, seem all to indicate the existence of an ancient lake. The river of Funzha, usually called Rio de

Bogota, into which flow the waters of the valley, forced its way through the mountains to the south-west of Santa Fé. Near the farm of Tequendama, this river rushes from the plain by a narrow outlet into a crevice, which descends towards the basin of the river Magdalena. Were an attempt made to close this passage, which is the sole opening out of the valley of Bogota, these fertile plains would gradually be converted into a sheet of water like the Mexican lake.

It is easy to perceive the influence of these geological facts on the traditions of the ancient inhabitants of these countries. We shall not decide, whether merely from the aspect of the country a people not far removed from civilization were led to form hypotheses on the first revolutions of the Globe ; or whether the great inundations of the valley of Bogota were sufficiently recent, to have left traces on the memory of men. Historical traditions are every where blended with religious opinions ; and it may not be uninteresting in this place to mention those, which the conqueror of this country, Gonzalo Ximenes de Quesada, found disseminated among the Muyscas, Panchas, and Natagaymas, when he first penetrated into the mountains of Cundinamarca\*.

\* See Lucas Fernandez Piedrahita, Obispo de Panama,

In the remotest times, before the Moon accompanied the Earth, according to the mythology of the Muysca or Mozca Indians, the inhabitants of the plain of Bogota lived like barbarians, naked, without agriculture, without any form of laws or worship. Suddenly appeared among them an old man, who came from the plains situate on the east of the Cordillera of Chingasa ; and who appeared to be of a race unlike that of the natives, having a long and bushy beard. He was known by three distinct appellations, Bochica, Nem-quetheba, and Zuhè. This old man, like Manco-Capac, instructed men how to clothe themselves, build huts, till the ground, and form themselves into communities. He brought with him a woman, to whom also tradition gives three names, Chia, Yubecayguaya, and Huythaca. This woman, extremely beautiful, and no less malignant, thwarted every enterprise of her husband for the happiness of mankind. By her skill in magic, she swelled the river of Funzha, and inundated the valley of Bogota. The greater part of the inhabitants perished in this deluge ; a few only found refuge on the summits of the neighbouring mountains. The old man, in anger, drove the beautiful Huythaca far from the Earth, and she became the Moon, which

*Historia general del nuevo Reyno de Grenada*, page 17 ; a work composed from the Mss. of Quesada.

began from that epocha to enlighten our planet during the night. Bochica, moved with compassion for those who were dispersed over the mountains, broke with his powerful arm the rocks that enclosed the valley, on the side of Canoas and Tequendama. By this outlet he drained the waters of the lake of Bogota; he built towns, introduced the worship of the Sun, named two chiefs, between whom he divided the civil and ecclesiastical authority, and then withdrew himself, under the name of Idacanzas, into the holy valley of Iraca, near Tunja, where he lived in the exercise of the most austere penitence for the space of two thousand years.

This Indian fable, which attributes the cataract of Tequendama to the founder of the empire of Zaque, contains a number of peculiarities, which we find scattered in the religious traditions of several nations of the old continent. The good and evil principle here seem to be personified in the old man Bochica and his wife Huythaca. The remote period when the Moon did not exist, reminds us of the boast of the Arcadians on the antiquity of their origin. The planet of the night is represented as a malignant being, augmenting the humidity of the Earth; while Bochica, child of the Sun, dries the soil, promotes agriculture, and becomes the benefactor of the Muyscas, as the first Inca was that of the Peruvians.

The traveller, who views the tremendous scenery of the cataract of Tequendama, will not be surprised, that rude tribes should have attributed a miraculous origin to rocks, which seem to have been cut by the hand of man; to that narrow gulf, into which falls headlong the mass of waters that issue from the valley of Bogota; to those rainbows reflecting the most vivid colours, and of which the forms vary every instant; to that column of vapour, rising like a thick cloud, and seen at five leagues distance from the walks around Santa Fé. The sixth plate can give but a very feeble idea of this majestic spectacle. If it be difficult to describe the beauties of cataracts, it is still more difficult to make them felt by the aid of the pencil. The impression they leave on the mind of the observer depends on the concurrence of a variety of circumstances. The volume of water must be proportioned to the height of the fall, and the scenery around must wear a wild and romantic aspect. The Pissevache and the Staubbach, in Switzerland, are lofty, but their masses of water are not very considerable. The Niagara and the fall of the Rhine, on the contrary, furnish an enormous volume of water, but their height is not above fifty metres. A cataract surrounded by hills only produces far less effect, than the falls of water which rush into the profound and narrow vallies of the Alps, the Pyrenees, and, above all,



the Cordilleras of the Andes. Independent of the height and mass of the column of water, the figure of the landscape, and the aspect of the rocks ; it is the luxuriant form of the trees and herbaceous plants, their distribution into groups, or into scattered thickets, the contrast of those craggy precipices and the freshness of vegetation, which stamp a peculiar character on these great scenes of nature. The fall of Niagara, placed beneath a northern sky, in the region of pines and oaks, would be still more beautiful, were its drapery composed of heliconias, palms, and arborescent ferns. The cataract of Tequendama forms an assemblage of every thing that is sublimely picturesque in beautiful scenery. This fall is not however, as it is commonly believed to be in the country, and repeated by naturalists in Europe, the loftiest cataract on the Globe: the river does not rush, as Bouguer relates, into a gulf of five or six hundred metres of perpendicular depth ; but there scarcely exists a cataract, which from so lofty a height precipitates so voluminous a mass of waters. The Rio de Bogota, after replenishing the marshes between the village of Facatativa and Fontibon, is still forty-four metres broad at Canoas, a little above the fall ; which is half the breadth of the Seine at Paris, between the Louvre and the Palace of the Arts. The river narrows considerably near its fall, where the crevice, which

appears to have been formed by an earthquake, is only ten or twelve metres wide. In very dry seasons, the volume of water, which, at a double bound, falls to a depth of a hundred and seventy-five metres, still presents a side view of ninety square metres. The two figures of men, represented in the drawing, serve as a scale of the total height of the fall. The point where these men are placed, on the upper bank, is two thousand four hundred and sixty-seven metres above the level of the ocean. From this point to the river Magdalena, the small river of Bogota, called at the foot of the cataract Rio de la Mesa, Rio de Tocayma, or Rio del Collegio, has still a fall of two thousand one hundred metres, which is more than one hundred and forty metres in every common French league.

The road, which leads from the town of Santa Fé to the fall of Tequendama, passes by the village of Suacha, and the great farm of Canoas, well known for its fine crops of wheat. The enormous mass of vapours, which continually rises from the cataract, and which is precipitated by its contact with the cold air, contributes much, it is believed, to the great fertility of this part of the plain of Bogota. At a small distance from Canoas, on the height of Chipa, a magnificent prospect astonishes the traveller by the variety of its contrasts. Leaving the cultivated plain rich in corn, he finds himself surrounded,

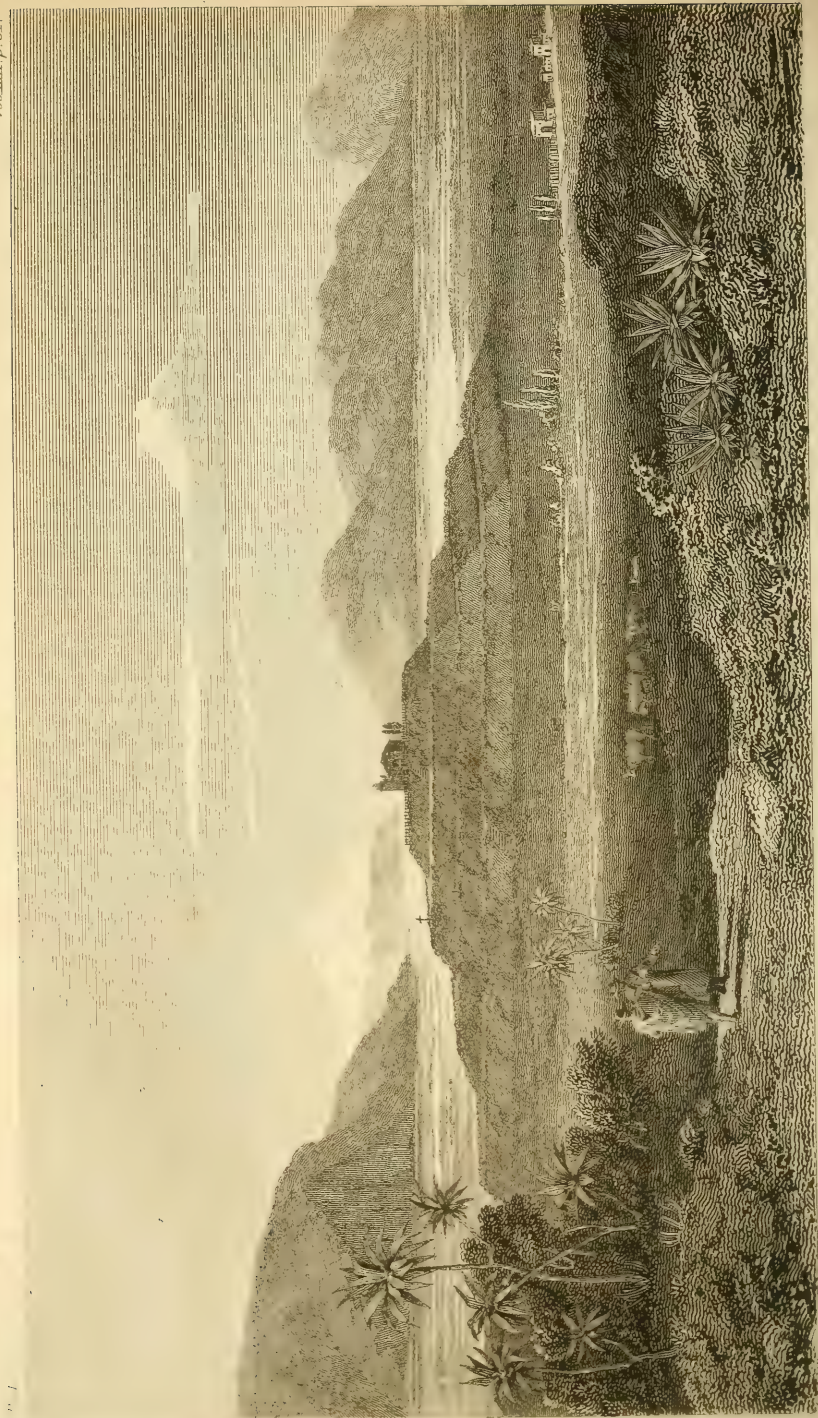
not only with the aralia, the alstonia theæformis, the begonia, and the yellow bark-tree (*cinchona cordifolia*), but with oaks, with elms, and other plants, the growth of which recalls to his mind the vegetation of Europe; when suddenly he discovers as from a terrace, and at his feet, a country producing the palm, the banana, and the sugar cane. The crevice into which the Rio de Bogota throws itself communicating with the plains of the warm region (*tierra caliente*), a few palm trees have sprung up at the foot of the cataract. This particular circumstance leads the inhabitants of Santa Fé to observe, that the cataract of the Tequendama is so high, that the water falls in one bound, from a cold (*tierra fria*) into a warm country. We are sensible, that a difference of one hundred and seventy-five metres of height is too inconsiderable, to have much influence on the temperature of the air; and it is not on account of the height of the soil, that the vegetation of the plain of Canoas contrasts with that of the ravine. If the rock of Tequendama, which is a gritstone with a clayey basis, were not quite perpendicular; and if the elevated plain of Canoas were sheltered like the crevice, the palm trees, which flourish at the foot of the cataract, would have pushed their migrations to the upper level of the river. The appearance of this vegetation is so much the more interesting to the inhabitants of the valley

of Bogota, as they live in a climate where the thermometer descends very often to the freezing point.

I succeeded, but not without danger, in carrying instruments into the crevice itself, at the foot of the cataract. It takes three hours to reach the bottom by a narrow path (*camino de la Calebra*), which leads to the ravine of La Povasa. Although the river loses in falling a great part of its water, which is reduced into vapours, the rapidity of the lower current forces the observer to keep at the distance of nearly one hundred and forty metres from the basin dug out by the fall. A few feeble rays of noon fall on the bottom of the crevice. The solitude of the place, the richness of the vegetation, and the dreadful roar that strikes upon the ear, contribute to render the foot of the cataract of Tequendama one of the wildest scenes, that can be found in the Cordilleras.







A View of the Pyramid of Cholula, near Mexico.

## PYRAMID OF CHOLULA.

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### PLATE VII.

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AMONG those swarms of nations, which, from the seventh to the twelfth century of the Christian era, successively inhabited the country of Mexico, five are enumerated, the Toltecks, the Cicimecks, the Acolhuans, the Tlascaltecks, and the Aztecks, who, notwithstanding their political divisions, spoke the same language, followed the same worship, and built pyramidal edifices, which they regarded as *teocallis*, that is to say, the houses of their gods. These edifices were all of the same form, though of very different dimensions; they were pyramids, with several terraces, and the sides of which stood exactly in the direction of the meridian, and the parallel of the place. The *teocalli* was raised in the midst of a square, and walled enclosure, which, somewhat like the *περιβολος* of the Greeks, contained gardens, fountains, the dwellings of the priests, and sometimes arsenals; since each house of a Mexican divinity, like the ancient temple of

Baal Berith, burnt by Abimelech, was a strong place. A great staircase led to the top of the truncated pyramid, and on the summit of the platform were one or two chapels, built like towers, which contained the colossal idols of the divinity, to whom the teocalli was dedicated. This part of the edifice must be considered as the most consecrated place: like the *ναος*, or rather the *σηκος*, of the Grecian temples. It was there also, that the priests kept up the sacred fire. From the peculiar construction of the edifice we have just described, the priest who offered the sacrifice was seen by a great mass of the people at the same time: the procession of the *teopixqui*, ascending or descending the staircase of the pyramid, was beheld at a considerable distance. The inside of the edifice was the burial place of the kings and principal personages of Mexico. It is impossible to read the descriptions, which Herodotus and Diodorus Siculus have left us of the temple of Jupiter Belus, without being struck with the resemblance of that Babylonian monument to the teocallis of Anahuac.

At the period when the Mexicans, or Aztecks, one of the seven tribes of the Anahuatlacks, (inhabitants of the banks of rivers), took possession, in the year 1190, of the equinoctial region of New Spain, they already found the pyramidal monuments of Teotihuacan, of Cholula, or



Cholollan, and of Papantla. They attributed these great edifices to the Toltecks, a powerful and civilized nation, who inhabited Mexico five hundred years earlier, who made use of hieroglyphical characters, who computed the year more precisely, and had a more exact chronology than the greater part of the people of the old continent. The Aztecks knew not with certainty what tribe had inhabited the country of Anahuac before the Toltecks; and consequently the belief, that the houses of the deity of Teotihuacan and of Cholollan was the work of the Toltecks, assigned them the highest antiquity they could conceive. It is however possible, that they might have been constructed before the invasion of the Toltecks; that is, before the year 648 of the vulgar era. We ought not to be astonished, that no history of any American nation should precede the seventh century; and that the annals of the Toltecks should be as uncertain as those of the Pelasgi and the Ausonians. The learned Mr. Schloezer has clearly proved, that the history of the North of Europe reaches no higher than the tenth century, an epocha when Mexico was in a more advanced state of civilization than Denmark, Sweden, and Russia.

The teocalli of Mexico was dedicated to Tezcatlipoca, the first of the Azteck divinities after Teotl, who is the supreme and invisible Being;

and to Huitzilopochtli, the god of war. It was built by the Aztecks, on the model of the pyramids of Teotihuacan, six years only before the discovery of America by Christopher Columbus. This truncated pyramid, called by Cortez the principal temple, was ninety-seven metres in breadth at its basis, and nearly fifty-four metres in height. It is not astonishing, that a building of these dimensions should have been destroyed a few years after the siege of Mexico. In Egypt there scarcely remains any vestiges of the enormous pyramids, which towered amidst the waters of the lake Moeris, and which Herodotus says were ornamented with colossal statues. The pyramids of Porsenna, of which the description seems somewhat fabulous, and four of which, according to Varro, were more than eighty metres in height, have equally disappeared in Etruria \*.

But if the European conquerors overthrew the teocallis of the Aztecks, they did not alike succeed in destroying more ancient monuments, that are attributed to the Tolteck nation. We shall give a succinct description of these monuments, remarkable for their form and magnitude.

The group of the pyramids of Teotihuacan is in the valley of Mexico, eight leagues north-

\* Plin. xxxvi, 19.



east from the capital, in a plain that bears the name of Micoatl, or the *Path of the Dead*. There are two large pyramids dedicated to the Sun (Tonatiuh), and to the Moon (Meztli); and these are surrounded by several hundreds of small pyramids, which form streets in exact lines from north to south, and from east to west. Of these two great teocallis, one is fifty-five, the other forty-four metres in perpendicular height. The basis of the first is two hundred and eight metres in length; whence it results, that the Tonatiuh Yztaqual, according to Mr. Oteyza's measurement, made in 1803, is higher than the Mycerinus, or third of the three great pyramids of Geeza in Egypt, and the length of its base nearly equal to that of the Cephren. The small pyramids, which surround the great houses of the Sun and the Moon, are scarcely nine or ten metres high; and served, according to the tradition of the natives, as burial places for the chiefs of the tribes. Around the Cheops and the Mycerinus in Egypt, there are eight small pyramids, placed with symmetry, and parallel to the fronts of the greater. The two teocallis of Teotihuacan had four principal stories, each of which was subdivided into steps, the edges of which are still to be distinguished. The nucleus is composed of clay mixed with small stones, and it is encased by a thick wall of te-

zontli, or porous amygdaloid \*. This construction recalls to mind that of one of the Egyptian pyramids of Sakharah, which has six stories; and which, according to Pocock, is a mass of pebbles and yellow mortar, covered on the outside with rough stones. On the top of the great Mexican teocallis were two colossal statues of the Sun, and the Moon: they were of stone, and covered with plates of gold, of which they were stripped by the soldiers of Cortez. When bishop Zumaraga, a Franciscan monk, undertook the destruction of whatever related to the worship, the history, and the antiquities of the natives of America, he ordered also the demolition of the idols of the plain of Micoatl. We still discover the remains of a staircase built with large hewn stone, which formerly led to the platform of the teocalli.

On the east of the group of the pyramids of Teotihuacan, on descending the Cordillera towards the gulf of Mexico, in a thick forest, called Tajin, rises the pyramid of Papantla. This monument was by chance discovered scarcely thirty years ago, by some Spanish hunters; for the Indians carefully conceal from the whites whatever was an object of ancient veneration. The form of this teocalli, which

\* Mandelstein of the German mineralogists.

had six, perhaps seven stories, is more tapering than that of any other monument of this kind : it is nearly eighteen metres in height, while the breadth of its basis is only twenty-five, and consequently about half as high as the pyramid of Caius Cestius at Rome, which is thirty-three metres. This small edifice is built entirely with hewn stones, of an extraordinary size, and very beautifully and regularly shaped. Three staircases lead to the top. The covering of its steps is decorated with hieroglyphical sculpture, and small niches, which are arranged with great symmetry. The number of these niches seems to allude to the three hundred and eighteen simple and compound signs of the days of the Cempohualilhuittl, or civil calendar of the Toltecks.

The greatest, most ancient, and most celebrated of the whole of the pyramidal monuments of Anahuac is the teocalli of Cholula. It is called in the present day the Mountain made by the hand of Man (*monte hecho a manos*). At a distance it has the aspect of a natural hill covered with vegetation. This pyramid is represented in the seventh plate in its present ruined state.

A vast plain, the Puebla, is separated from the valley of Mexico by the chain of volcanic mountains, which extend from Popocatepetl, towards

Rio Frio, and the peak of Telapón \*. This plain, fertile though destitute of trees, is rich in memorials interesting to Mexican history. In it flourished the capitals of the three republics of Tlascalla, Huexocingo, and Cholula, which, notwithstanding their continual dissensions, resisted with no less firmness the despotism and usurping spirit of the Azteck kings.

The small city of Cholula, which Cortez, in his Letters to Charles V, compares with the most populous cities of Spain, contains at present scarcely sixteen thousand inhabitants. The pyramid is to the east of the city, on the road which leads from Cholula to Puebla. It is well preserved on the western side, which is that represented in the engraving. The plain of Cholula presents that aspect of barrenness, which is peculiar to plains elevated two thousand two hundred metres above the level of the ocean. A few plants of the agave and *dracæna* rise on the foreground, and at a distance the summit of the volcano of Orizaba is beheld covered with snow ; a colossal mountain, five thousand two hundred and ninety-five metres of absolute height, and of which I have published a sketch in my Mexican Atlas, plate 17.

The teocalli of Cholula has four stories, all of

\* See my Mexican Atlas, pl. III and IX.

equal height. It appears to have been constructed exactly in the direction of the four cardinal points ; but as the edges of the stories are not very distinct, it is difficult to ascertain their primitive direction. This pyramidal monument has a broader basis than that of any other edifice of the same kind in the old continent. I measured it carefully, and ascertained, that its perpendicular height is only fifty metres, but that each side of its basis is four hundred and thirty-nine metres in length. Torquemada computes its height at seventy-seven metres ; Betancourt, at sixty-five ; and Clavigero, at sixty-one. Bernal Diaz del Castillo, a common soldier in the army of Cortez, amused himself by counting the steps of the staircases, which led to the platform of the teocallis : he found one hundred and fourteen in the great temple of Tenochtitlan, one hundred and seventeen in that of Texcuco, and one hundred and twenty in that of Cholula. The basis of the pyramid of Cholula is twice as broad as that of Cheops ; but its height is very little more than that of the pyramid of Mycerinus. On comparing the dimensions of the house of the Sun, at Teotihuacan, with those of the pyramid of Cholula, we see, that the people, who constructed these remarkable monuments, intended to give them the same height, but with bases, the length of which should be in the proportion of one to two. We find also



a considerable difference in the proportions between the base and the height in these various monuments; in the three great pyramids of Geeza, the heights are to the bases as 1 to 1·7; in the pyramid of Papantla covered with hieroglyphics, this ratio is as 1 to 1·4; in the great pyramid of Teotihuacan, as 1 to 3·7; and in that of Cholula as 1 to 7·8. This last monument is built with unbaked bricks (*xamilli*), alternating with layers of clay. I have been assured by some Indians of Cholula, that the inside is hollow; and that, during the abode of Cortez in this city, their ancestors had concealed, in the body of the pyramid, a considerable number of warriors, who were to fall suddenly on the Spaniards: but the materials with which the teocalli is built, and the silence of the historians of those times\*, give but little probability to this assertion.

It is certain, however, that in the interior of this pyramid, as in other teocallis, there are considerable cavities, which were used as sepulchres for the natives. A particular circumstance led to this discovery. Seven or eight years ago the road from Puebla to Mexico, which before passed to the north of the pyramid, was changed. In tracing the road, the first story was cut through, so that an eighth part remained isolated

\* *Cartas de Hernan Cortez*; Mexico, 1770, p. 69.

like a heap of bricks. In making this opening a square house was discovered in the interior of the pyramid, built of stone, and supported by beams made of the wood of the deciduous cypress (*cupressus disticha*). The house contained two skeletons, idols in basalt, and a great number of vases, curiously varnished and painted. No pains were taken to preserve these objects, but it is said to have been carefully ascertained, that this house, covered with bricks and strata of clay, had no outlet. Supposing that the pyramid was built, not by the Toltecks, the first inhabitants of Cholula, but by prisoners made by the Cholulans from the neighbouring nations, it is possible, that they were the carcases of some unfortunate slaves who had been shut up to perish in the interior of the teocalli. We examined the remains of this subterraneous house, and observed a particular arrangement of the bricks, tending to diminish the pressure made on the roof. The natives being ignorant of the manner of making arches, placed very large bricks horizontally, so that the upper course should pass beyond the lower. The continuation of this kind of stepwork served in some measure as a substitute for the Gothic vault, and similar vestiges have been found in several Egyptian edifices. An adit dug through the teocalli of Cholula, to examine its internal structure, would be an interesting operation; and it is singular,

that the desire of discovering hidden treasure has not prompted the undertaking. During my travels in Peru, in visiting the vast ruins of the city of Chimu, near Mansiche, I went into the interior of the famous Huaca de Toledo, the tomb of a Peruvian prince, in which Garci Gutierrez de Toledo discovered, on digging a gallery, in 1576, massive gold amounting in value to more than five millions of francs, as is proved by the book of accounts, preserved in the mayor's office at Truxillo.

The great teocalli of Cholula, called also the *Mountain of unbaked bricks* (tlalchihualtepec), had an altar on its top, dedicated to Quetzalcoatl, the god of the air. This Quetzalcoatl, whose name signifies serpent clothed with green feathers, from *coatl*, serpent, and *quetzalli*, green feathers, is the most mysterious being of the whole Mexican mythology. He was a white and bearded man, like the Bochicha of the Muyscas, of whom we spoke in our descriptions of the Cataract of Tequendama. He was high priest of Tula (Tollan), legislator, chief of a religious sect, which, like the Sonyasis and the Bouddhists of Indostan, inflicted on themselves the most cruel penances. He introduced the custom of piercing the lips and the ears, and lacerating the rest of the body with the prickles of the agave leaves, or the thorns of the cactus; and of putting reeds into the wounds, in order

that the blood might be seen to trickle more copiously. In a Mexican drawing in the Vatican library\*, I have seen a figure representing Quetzalcoatl appeasing by his penance the wrath of the gods, when, thirteen thousand and sixty years after the creation of the World, (I follow the very vague chronology computed by Rios) a great famine prevailed in the province of Culan. The saint had chosen his place of retirement near Tlaxapuchicalco, on the volcano Catcitetl (*Speaking Mountain*), where he walked barefooted on agave leaves armed with prickles. We seem to behold one of those rishi, hermits of the Ganges, whose pious austerity† is celebrated in the Pouranas.

The reign of Quetzalcoatl was the golden age of the people of Anahuac. At that period, all animals, and even men, lived in peace; the earth brought forth, without culture, the most fruitful harvests; and the air was filled with a multitude of birds, which were admired for their song, and the beauty of their plumage. But this reign, like that of Saturn, and the happiness of the world, were not of long duration; the great spirit Tezcatlipoca, the Brahma of the nations of Anahuac, offered Quetzalcoatl a beverage, which, in rendering him immortal, inspired

\* Codex anonymus, No. 3738, fol. 8.

† Schlegel über Sprache and Weisheit der Indier, p. 132.

him with a taste for travelling ; and particularly with an irresistible desire of visiting a distant country, called by tradition Tlapallan\*. The resemblance of this name to that of Huehuetlapallan, the country of the Toltecks, appears not to be accidental. But how can we conceive, that this white man, priest of Tula, should have taken his direction, as we shall presently find, to the south-east, towards the plains of Cholula, and thence to the eastern coasts of Mexico, in order to visit this northern country, whence his ancestors had issued in the five hundred and ninety-sixth year of our era ?

Quetzalcoatl, in crossing the territory of Cholula, yielded to the intreaties of the inhabitants, who offered him the reins of government. He dwelt twenty years among them, taught them to cast metals, ordered fasts of eight days, and regulated the intercalations of the Tolteck year. He preached peace to men, and would permit no other offerings to the Divinity, than the first fruits of the harvest. From Cholula Quetzalcoatl passed on to the mouth of the river Goasacoalco, where he disappeared, after having declared to the Cholulans (Chololtecatles), that he would return in a short time to govern them again, and renew their happiness.

It was the posterity of this saint, whom the

\* Clavigero Storia di Messico, tom. 2, p. 12.



unhappy Montezuma thought he recognized in the soldiers of Cortez. "We know by our books," said he, in his first interview with the Spanish General, "that myself, and those who inhabit this country, are not natives, but strangers, who came from a great distance. We know also, that the chief, who led our ancestors hither, returned for a certain time to his primitive country, and thence came back to seek those, who were here established. He found them married to the women of this land, having a numerous posterity, and living in cities, which they had built. Our ancestors hearkened not to their ancient master, and he returned alone. We have always believed, that his descendants would one day come to take possession of this country. Since you arrive from that region, where the Sun rises, and, as you assure me, you have long known us, I cannot doubt, but that the king, who sends you, is our natural master\*."

Another very remarkable tradition still exists among the Indians of Cholula, according to which the great pyramid was not originally destined to serve for the worship of Quetzalcoatl. After my return to Europe, on examining at Rome the Mexican manuscript in the Vatican library, I found, that this same tradition was

\* First Letter of Cortez, § 21 and 29.

already recorded in a manuscript of Pedro de Los Rios, a Dominican monk, who, in 1566, copied on the very spot all the hieroglyphical paintings he could procure. "Before the great inundation, which took place four thousand eight hundred years after the creation of the World, the country of Anahuac was inhabited by giants (tzocuillixeque). All those who did not perish were transformed into fishes, save seven, who fled into caverns. When the waters subsided, one of these giants, Xelhua, surnamed the architect, went to Cholollan; where, as a memorial of the mountain Tlaloc, which had served for an asylum to himself and his six brethren, he built an artificial hill in form of a pyramid. He ordered bricks to be made in the province of Tlamanalco, at the foot of the Sierra of Cocotl, and to convey them to Cholula he placed a file of men, who passed them from hand to hand. The gods beheld with wrath this edifice, the top of which was to reach the clouds. Irritated at the daring attempt of Xelhua, they hurled fire on the pyramid. Numbers of the workmen perished; the work was discontinued, and the monument was afterwards dedicated to Quetzalcoatl, the god of the air."

This history reminds us of those ancient traditions of the East, which the Hebrews have recorded in their sacred books. The Cholulans preserved a stone, which, enveloped in a ball

of fire, had fallen from the clouds on the top of the pyramid. This aeorolite had the figure of a toad. Rios, to prove the high antiquity of this fable of Xelhua, observes, that it was contained in a hymn, which the Cholulans sung at their festivals, dancing round the teocalli; and that this hymn began with the words *Tulanian hulu-læx*, which are words belonging to no dialect at present known in Mexico. In every part of the Globe, on the ridge of the Cordilleras, as well as in the isle of Samothrace in the Egean sea, fragments of primitive languages are preserved in religious rites.

The size of the platform of the pyramid of Cholula, on which I made a great number of astronomical observations, is four thousand two hundred square metres. From it the eye ranges over a magnificent prospect; Popocatepetl, Iztaccihuatl, the peak of Orizaba, and the Sierra de Tlascalla, famous for the tempests which gather around its summit. We view at the same time three mountains higher than Mount Blanc, two of which are still burning volcanoes. A small chapel, surrounded with cypress, and dedicated to the Virgin de los Remedios, has succeeded to the temple of the god of the air, or the Mexican Indra. An ecclesiastic of the Indian race celebrates mass every day on the top of this antique monument.

In the time of Cortez, Cholula was considered as a holy city. No where existed a greater number of teocallis, of priests, and religious orders (*tlamacazque*) ; no spot displayed greater magnificence in the celebration of public worship, or more austerity in its penances and fasts. Since the introduction of christianity among the Indians, the symbols of a new worship have not entirely effaced the remembrance of the old. The people assemble in crowds from distant quarters at the summit of the pyramid, to celebrate the festival of the Virgin. A mysterious dread, a religious awe, fills the soul of the Indian at the sight of this immense pile of bricks, covered with shrubs and perpetual verdure.

We have above remarked the great similarity of construction between the Mexican teocallis and the temple of Bel or Belus, at Babylon. This analogy had already struck Mr. Zoega, though he had been able to procure but very incomplete descriptions of the group of the pyramids of Teotihuacan\*. According to Herodotus, who visited Babylon, and saw the temple of Belus, this pyramidal monument had eight stories. It was a stadium high, and the breadth of its basis was equal to its height. The outer wall which surrounded it, the περιβολος, was two

\* Zoega, de Origine Obeliscorum, p. 380.

stadia square. A common olympic stadium was one hundred and eighty-three metres: the Egyptian stadium was only ninety-eight\*. The pyramid was built of brick and asphaltum. A temple (*naos*) was erected on its top, and another at its basis. The first, according to Herodotus, was without statues; it contained only a table of gold, and a bed on which reposed a female chosen by the god Belus †. Diodorus Siculus, on the other hand, asserts, that the upper temple contained an altar, and three statues, to which, according to notions taken from the worship of the Greeks, he gave the names of Jupiter, Juno, and Rhea‡. But neither these statues nor any part of the monument existed in the time of Diodorus and Strabo. In the Mexican teocallis, as in the temple of Belus, the lower *naos* was distinguished from the temple on the platform of the pyramid. The same distinction is clearly pointed out in the letters of Cortez, and in the history of the conquest written by Bernal Diaz, who dwelt several months in the palace of the king Axajacatl, and consequently opposite the teocalli of Huitzilopochtli.

\* Vincent, Voyage of Nearchus, p. 56 (French translation).

† Herodotus, lib. 1, c. 181, 183.

‡ Diodorus Siculus, Ed. Wesselingiana, vol. 1, lib. 2, page 123.



No one of the ancient writers, neither Herodotus nor Strabo\*, Diodorus nor Pausanias†, Arrian‡ nor Quintus Curtius§, asserts, that the temple of Belus was erected according to the four cardinal points, like the Egyptian and Mexican pyramids. Pliny observes only, that Belus was considered as the inventor of astronomy: *Inventor hic fuit sideralis scientiæ* ||. Diodorus relates, that the Babylonian temple served as an observatory to the Chaldeans. “It must be admitted,” says he, “that this building was of an extraordinary height, and that here the Chaldeans made their observations on the stars, the rising and setting of which might be exactly perceived, on account of the elevation of the edifice. The Mexican priests, (*teopixqui*) made observations also on the stars from the summit of the teocallis; and announced to the people, by the sound of the horn, the hours of the night¶. These teocallis were built in the interval between the epocha of Mahomet and the reign of Ferdinand and Isabella; and we cannot

\* Strabo, lib. 16, 211.

† Pausanias, lib. 8, ed. Xylandri, p. 509, n. 31.

‡ Arrianus, lib. 7, 17.

§ Quint. Curt. lib. 5, 1 et 37.

|| Plin. Hist. nat. lib. vi, 30.

¶ Gama, Descripcion cronologica de la Piedra calendaria; Mexico, 1792, p. 15.

observe without astonishment, that American edifices, the form of which is almost the same as that of one of the most ancient monuments on the banks of the Euphrates, belong to times so near our own.

When we consider in the same point of view the pyramidal monuments of Egypt, of Asia, and of the New Continent, we see, that, though their form is alike, their destination was altogether different. The group of pyramids at Geeza and at Sakhara in Egypt; the triangular pyramid of the Queen of the Scythians, Zarina, which was a stadium high, and three in circumference, and which was decorated with a colossal figure\*; the fourteen Etruscan pyramids, which are said to have been enclosed in the labyrinth of the king Porsenna, at Clusium; were reared to serve as the sepulchres of the illustrious dead. Nothing is more natural to men, than to commemorate the spot where rest the ashes of those, whose memory they cherish; whether it be, as in the infancy of the race, by simple mounds of earth, or in later periods by the towering height of the tumulus. Those of the Chinese and of Thibet have only a few metres of elevation†. Farther to the west the dimensions increase:

\* Diodorus Siculus, lib. 2, c. 34.

† Duhalde, Description of China, tom. 2, p. 126. Asiatic Researches, vol. ii, p. 314.

the tumulus of the king Alyattes, father of Crœsus, in Lydia, was six stadia, and that of Ninus was more than ten stadia in diameter\*. In the north of Europe the sepulchres of the Scandinavian king Gormus, and the queen Daneboda, covered with mounds of earth, are three hundred metres broad, and more than thirty high. We meet with these tumuli in both hemispheres; in Virginia, and in Canada, as well as in Peru, where numerous galleries, built with stone, and communicating with each other by shafts, fill up the interior of the *huacas*, or artificial hills. In Asia these rustic monuments have been decorated with the refinement of eastern luxury, while their primitive forms have been preserved. The tombs of Pergamus are cones of earth, raised on a circular wall, which seems to have been encased with marble†.

The teocallis, or Mexican pyramids, were at once temples and tombs. We have already observed, that the plain, on which were built the houses of the Sun and of the Moon at Teotihuaca, is called the *Path of the Dead*; but the essential and principal part of a teocalli was the chapel, the *naos*, at the top of the edifice. In

\* Herodotus, lib. 1, c. 93. Ctesias, apud Diod. Sicul. lib. 2, c. 7.

† Choiseul Gouffier, Voyage Pittoresque de la Grèce, tom. 2, p. 27 to 31.

the infancy of civilization, high places were chosen by the people to offer sacrifices to the gods. The first altars, the first temples, were erected on mountains; and when these mountains were isolated, the worshippers delighted in the toil of shaping them into regular forms, cutting them by stories, and making stairs to reach the summit more easily. Both continents afford numerous examples of these hills divided into terraces, and supported by walls of brick or stone. The teocallis appear to me to be merely artificial hills, raised in the midst of a plain, and intended to serve as a basis to the altars. What more sublime and awful than a sacrifice, that is offered in the sight of an assembled nation! The pagods of Indostan have nothing in common with the Mexican temples. That of Tanjore, of which Mr. Daniell has given beautiful drawings\*, is a tower with several stories, but the altar is not at the top of the monument.

The pyramid of Bel was at once the temple and tomb of this god. Strabo does not speak of this monument as a temple, he simply calls it the tomb of Belus. In Arcadia, the tumulus ( $\chi\tilde{\omega}\mu\alpha$ ), which contained the ashes of Calisto, bore on its top a temple of Diana. Pausanias†

\* Oriental Scenery, Pl. 17.

† Pausanias, lib. 8, c. 35.3

describes it as a cone, made by the hands of man, and long covered with vegetation. This is a very remarkable monument, in which the temple is only an incidental decoration; it serves, if we may use the expression, as an intermediary step between the pyramids of Sakhara and the Mexican teocallis \*.

\* See my Political Essay on the Kingdom of New Spain, pages 169, 187, 289.



DETACHED MASS  
OF THE  
PYRAMID OF CHOLULA.

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PLATE VIII.

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THE pyramid of Cholula is so covered with vegetation, that it is extremely difficult to examine the structure of the great terraces. The Spanish historians of the sixteenth century, several of whom visited Mexico in the time of Montezuma, or a few years after his death, assert, that the whole edifice is built with bricks. In looking through the manuscripts of Pedro de Los Rios in the Vatican at Rome\*, I found, as I have already stated, that the inhabitants of Cholula believed, according to an ancient tradition, that the bricks with which the teocalli was built were made in the province of Tlalmanalco, at the foot of mount Cocotl ; and that prisoners,

\* Cod. Vat. anonym. n. 3738, fol. 10.

placed in files, conveyed the bricks from hand to hand the space of several leagues, from Cocotl to Cholula. This tradition, which has the air of an Arabian tale, is found among the Peruvians. Those of Cuzco, who consider themselves as the inhabitants of a holy city, assert, that, when the Inca Tupac Yupanqui took possession of the kingdom of Quito (Quitu), he ordered immense masses of freestone to be taken from the quarries near Cuzco, in order to erect temples to the Sun in the newly conquered countries.

I was enabled to ascertain the internal structure of the pyramid of Cholula in two different places; near the summit, on the front opposite the volcano of Popocatepetl; and on the northern side, where the first terrace is cut through by the new road, which leads from Puebla to Mexico. In digging this road the end of the temple was detached from the rest of the mass. The eighth plate represents this detached part, in which the alternate layers of brick and clay are distinctly seen. The bricks were generally eight centimetres high, and forty in length; and seemed to me not to have been burnt, but only dried in the Sun; they may, however, have undergone a slight baking, and the humidity of the air may have rendered them friable. Perhaps the strata of clay, which separate those of brick, are wanting on the inside of the pyramid, and in the parts which support the enormous

weight of the whole mass. Mr. Zoega \* erroneously imagined, that the teocalli of Cholula was a real *choma*, a mound of earth, cased externally with a layer of bricks. Gemelli, whom Robertson and other historians of the first rank accuse of inaccuracy more than he deserves, describes this pyramid under the name of a pyramid of earth †.

The construction of the teocalli, as we have already observed, reminds us of the most ancient monuments, that are recorded in the history of the civilization of mankind. The temple of Jupiter Belus, which seems to be recognized in the ancient mythology of the Hindoos under the name of Bali ‡, the pyramids of *Meidoun* and *Dahchour*, and several of the group of Sakhara, in Egypt, are also composed of immense heaps of bricks, the remains of which, after a lapse of thirty ages, are still in good preservation.

\* De Obeliscis, page 380.

† Giro del Modo, tom. vi, p. 380.

‡ Fra Paolino Di S. Bartholomeo, Viaggio alle Indie Orientali. p. 241.

## MONUMENT OF XOCHICALCO.

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### PLATE IX.

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THE singular monument, a fragment of which covered with sculpture is represented in this engraving, is considered in the country as a military monument. To the south east of the city of Cuernavaca (the ancient Quauhnhuac), on the western declivity of the Cordillera of Anahuac, in that happy region, designated by the inhabitants under the name of *tierra templada* (temperate region) because it is the reign of perpetual spring, rises an insolated hill, which, according to the barometrical measurement of Mr. Alzate, is one hundred and seven metres high. This hill is on the west of the road leading from Cuernavaca to the village of Miacatlan. The Indians call it, in the Mexican or Azteck dialect, *Xochicalco*, or the *House of Flowers*. We shall see farther on, that the etymology of this name is as uncertain, as the epocha of the construction of the monument, which is attributed to the Toltecks. This nation is to the

Mexican antiquaries, what the Pelasgian colonists were to the Archæologists of Italy. Whatever is lost in the night of time is considered as the work of a people, among whom we think we discover the first germes of civilization.

The hill of Xochicalco is a mass of rocks, to which the hand of man has given a regular conic form, and which is divided into five stories, or terraces, each of which is covered with masonry. These terraces are nearly twenty metres in perpendicular height; but narrow towards the top, as in the teocallis, or Azteck pyramids, the summit of which was decorated with an altar. The whole of the terraces slope a little toward the south west, probably for the easier running off of the rains, which are very frequent in this region. The hill is surrounded by a deep and very broad ditch, so that the whole entrenchment is nearly four thousand metres in circumference. The magnitude of these dimensions ought not to surprise us: on the ridge of the Cordilleras of Peru, and on heights almost equal to that of the peak of Teneriffe, M. Bonpland and myself have seen monuments still more considerable. Lines of defence, and entrenchments of extraordinary length, are found in the plains of Canada. The whole of these American works resemble those, which are daily discovered in the eastern part of Asia; nations of the Mongul race, those especially that are most advanced in



civilization, have built walls, which separate whole provinces.

The summit of the hill of Xochicalco is an oblong platform, seventy-two metres from north to south, and ninety-six from east to west. This platform is encircled by a wall of hewn stone, more than two metres high, which served as a defence for the combatants. In the centre of this spacious military square, we find the remains of a pyramidal monument, which had five stories, the form of which resembled the *teocallis* we have already described. The first story only has been preserved, and it is that which is represented in the ninth plate. The owners of a sugar house near the spot demolished like barbarians the pyramid, and employed the stones to build their ovens. The Indians of Tetlama assert, that the five stories still existed in 1750 ; and from the dimensions of the first story we may conjecture, that the edifice was twenty metres high. Its faces are exactly fronting the four cardinal points. The base of the edifice is 20·7 metres in length, and 17·4 in breadth. It is very remarkable, that no vestige of a staircase can be discovered leading to the top of the pyramid, where formerly it is asserted there was a stone seat (*ximotlalli*), ornamented with hieroglyphics.

Travellers, who examine attentively this work of the native tribes of America, cannot fail to be

greatly struck with the polish and the cut of the stones, all of which are parallelopipeds ; the care with which they have been arranged, without cement between the joints ; and the execution of the reliefs, with which the stones are decorated. Each figure occupies several stones ; and, from the outlines not being interrupted by the joints of the stones, we may conjecture, that these reliefs were sculptured after the construction of the edifice was finished. Among the hieroglyphical ornaments of the pyramid of Xochicalco, we distinguish heads of crocodiles spouting water, and figures of men sitting crosslegged according to the custom of several nations of Asia. As the edifice is placed on a plain, elevated more than thirteen hundred metres above the level of the ocean, and since crocodiles haunt only the rivers which are near the coast ; it seems strange, that the architect, instead of imitating plants and animals belonging to mountainous countries, should have employed, in these reliefs, with extreme industry, the gigantic productions of the torrid zone.

The ditch, with which the hill is surrounded, the covering of the terraces, the great number of subterraneous apartments dug in the rock on the northern side ; the wall that defends the approach to the platform, concur all together to give the monument 'of Xochicalco a military aspect. The natives even to this day designate

the ruins of the pyramid by a name equivalent to that of a castle, or citadel. The great analogy between the form of this kind of citadel, and the *teocallis*, leads me to think, that the hill of Xochicalco was merely a fortified temple. The pyramid of Mexitli, or the great temple of Tenochtitlan, contained also an arsenal, and served during the siege as a fort, sometimes to the Mexicans, and at others to the Spaniards. We learn from Scripture, that, in the earliest times, the temples of Asia, such as that of Baal Berith at Shechem, in Canaan, were not only buildings consecrated to worship, but also entrenchments, in which the inhabitants of a city defended themselves against the attacks of an enemy. Nothing indeed is more natural to men, than to fortify the places, which contain the tutelary gods of the country. What more animating when the state is in danger, than to fly to the foot of their altars, and fight under their immediate protection? Among the nations whose temples were built like the pyramid of Belus, one of the most ancient in its figure, the structure of the edifice might serve the double purpose of worship and defence. In the Grecian temples, the wall which formed the *peribolos* alone afforded an asylum to the besieged.

The natives of the neighbouring village of Tetlama are in possession of a map, drawn before the arrival of the Spaniards, but to which

some names have been added since the conquest. In this map, at the place where the monument of Xochicalco is situate, is the figure of two warriors fighting with clubs, one of whom is called Xochicatli, and the other Xicatetli. We shall not here follow the Mexican antiquaries in their etymological discussions, to learn whether one of these warriors gave his name to the hill of Xochicalco ; or whether the image of two combatants merely denotes a battle between two neighbouring nations : or finally, whether the denomination of the *House of Flowers* was given to this pyramidical monument, because the Toltecks, like the Peruvians, offered to the divinity only fruits, flowers, and incense. It was also near Xochicalco, that thirty years since an isolated stone was found, on which was represented in relief an eagle tearing a captive ; an allusion, no doubt, to a victory obtained by the Aztecks over some neighbouring nation.

The drawing of the relief of the first story was copied from an engraving published by Mr. Alzate, at Mexico, in 1791. I had no opportunity myself of visiting this remarkable monument. When, arriving in New Spain by way of the South Sea, I went in the month of April, 1803, from Acapulco to Cuernavacca, I had never heard of the hill of Xochicalco ; and I regret not having verified myself the descrip-

tion\* given of this monument by Mr. Alzate, corresponding member of the Academy of Sciences at Paris. There being no scale to the ninth plate, it is necessary to observe, that the height of the figures sitting cross-legged is 10·3<sup>m</sup>.

\* *Descripcion de las Antiquidades de Xochicalco*, par Don Joseph Antonia Alzate y Ramirez ; Mexico, 1791. *Due Antichi Monumenti di Architettura Messicana illustrati da Pietro Marquez* ; Rome, 1804.



## VOLCANO OF COTOPAXI.

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### PLATE X.

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IN the description of the valley of Icononzo, I observed, that the enormous height of the elevated plains, which surround the lofty summits of the Cordilleras, somewhat weakens the impression, which these great masses leave on the mind of a traveller accustomed to the majestic scenes of the Alps and the Pyrenees. It is not so much the absolute height of mountains, as their aspect, figure, and groupings, that give a peculiar character to the landscape.

I have endeavoured to represent what may be called the physiognomy of mountains, in a series of drawings, some of which have already appeared in the geographical and physical Atlas belonging to my Essay on the Kingdom of New Spain. The comparison of the respective forms of mountains in the most distant parts of the Globe, like that of the forms of the vegetable tribes under different climates, appeared to me highly interesting to geology. Very few ma-

terials yet exist for so important a work. Without the aid of geodesical instruments, by which we measure very small angles, it is almost impossible to determine the outlines with sufficient exactness. While I was employed in these measurements in the southern hemisphere, on the ridge of the Cordilleras of the Andes, Mr. Osterwald, with the assistance of a celebrated astronomer, Mr. Tralles, was sketching, by a similar method, the chain of the Alps of Switzerland, as it appears when viewed from the banks of the lake of Neuchâtel. This view, lately published, is so very exact, that, the distance of each summit being known, their relative height is found by employing in the calculation only the simple measure of the outlines of the drawing. Mr. Tralles made use of a repeating circle. The angles by which I determined the size of the different parts of the mountain were taken with a sextant by Ramsden, the limb of which marked with certainty six or eight seconds. By the repetition of this operation at the interval of distant periods, the accidental changes, which take place on the surface of the Globe, may some day be verified. In a country exposed to earthquakes, and overwhelmed by volcanoes, it is very difficult to determine whether the mountains diminish, or whether by the ejection of ashes and scorïæ they insensibly augment. The simple

angles of elevation, taken at determinate stations, would solve this question more clearly than a complete trigonometrical survey, the result of which is affected by the errors, which may take place both in the measurement of the basis, and in that of the oblique angles.

When we consider the physiognomy of the mountains on each continent, we discover an analogy of form, which we could not have expected, if we reflect on the concurrence of the forces, which in the primitive world have acted tumultuously on the softened surface of our planet. The fire of volcanoes raises cones of ashes and pumice stones, where it penetrates through a crater; immense swellings, like domes of extraordinary magnitude, seem owing to the expansive force only of the elastic vapours; earthquakes have raised up strata full of sea-shells; and the basins which now form circular vallies, or elevated plains surrounded by mountains, have been furrowed by the currents of the sea. Each country of the Globe has its peculiar physiognomy; but amidst these characteristic features, which bestow such a richness and variety on the face of nature, we are struck with a resemblance of form, founded on an identity of local causes and circumstances. When we sail amid the Canary islands, and observe the basaltic cones of Lanzerota, of Alegranza, and of Graciosa, we seem to view the group of the

Euganean mountains, or the trappean hills of Bohemia. The granites, the micaceous schists, the old sand-stones, the calcareous formations, which the mineralogists designate under the names of *formations of the Jura, of the High Alps, or transition limestone*, give a particular character to the outline of the great masses, and to the breaches found on the ridges of the Andes, the Pyrenees, and the Uralian mountains. The nature of the rocks has every where modified the external form of the mountains.

Cotopaxi, the summit of which is represented in the tenth plate, is the loftiest of those volcanoes of the Andes, which at recent epochs have undergone eruptions. Its absolute height is five thousand seven hundred and fifty-four metres (two thousand nine hundred and fifty-two toises); it is double that of Canigou; and consequently eight hundred metres higher than Vesuvius would be, were it placed on the top of the Peak of Teneriffe. Cotopaxi is also the most dreadful volcano of the kingdom of Quito, and its explosions the most frequent and disastrous. The mass of scorixæ, and the huge pieces of rock thrown out of this volcano, which are spread over the neighbouring valleys, covering a surface of several square leagues, would form, were they heaped together, a colossal mountain. In 1738, the flames of Cotopaxi rose nine hundred metres above the brink of the crater. In 1744, the

roarings of the volcano were heard as far as Honda, a town on the borders of the Magdalena, and at the distance of two hundred common leagues. On the 4th of April, 1768, the quantity of ashes ejected by the mouth of Cotopaxi was so great, that in the towns of Hambato and Tacunga day broke only at three in the afternoon, and the inhabitants were obliged to use lanterns in walking the streets. The explosion which took place in the month of January, 1803, was preceded by a dreadful phenomenon, the sudden melting of the snows that covered the mountain. For twenty years before, no smoke or vapour, that could be perceived, had issued from the crater; and in a single night the subterraneous fire became so active, that at sunrise the external walls of the cone, heated, no doubt, to a very considerable temperature, appeared naked, and of the dark colour, which is peculiar to vitrified scoriæ. At the port of Guayaquil, fifty-two leagues distant in a straight line from the crater, we heard, day and night, the noises of the volcano, like continued discharges of a battery; we distinguished these tremendous sounds even on the Pacific Ocean, to the south-west of the island of Puna.

Cotopaxi is situate to the south-east of the city of Quito, at the distance of twelve leagues, between the mountain of Ruminnavi; the summit of which, rugged with small separate rocks,



extends itself like a wall of enormous height ; and Quelendanna, which enters the boundary of the eternal snows. It is in this part of the Andes, that a longitudinal valley separates the Cordilleras into two parallel chains. The bottom of this valley is three thousand metres above the level of the ocean, so that Chimborazo and Cotopaxi, seen from the elevated plains of Lican and Mulalo, appear no higher than the Col de Geant and du Cramont, measured by Saussure. As there is reason to suppose, that the proximity of the ocean contributes to feed the volcanic fire, the geologist is astonished to find, that the most active volcanoes in the kingdom of Quito, Cotopaxi, Tungurahua, and Sangay, belong to the eastern chain of the Andes, and consequently that which is farthest from the coasts. The whole of the peaks, except Rucu-Pichincha, which crown the Western Cordilleras, seem to be volcanoes extinguished for a long series of ages ; but the mountain of which we give a drawing, and which is  $2^{\circ} 2'$  distant from the nearest coasts, those of Esmeralda and the bay of San-Mateo, spouts out at different periods cataracts of fire, and spreads destruction over the surrounding plains.

The form of Cotopaxi is the most beautiful and regular of the colossal summits of the high Andes. It is a perfect cone, which, covered with an enormous layer of snow, shines with

dazzling splendor at the setting of the sun, and detaches itself in the most picturesque manner from the azure vault of Heaven. This covering of snow conceals from the eye of the observer even the smallest inequalities of the soil; no point of rock, no stony mass, penetrates this coating of ice, or breaks the regularity of the figure of the cone. The summit of Cotopaxi resembles the Sugar-loaf (*Pan de azucar*) which terminates the Peak of Teyde; but the height of its cone is six times the height of that of the great volcano of the Island of Teneriffe.

It is only near the brink of the crater we see ledges of rock, that are never covered with snow, and that look at a distance like stripes of the darkest hue; the great steepness of this part of the cone, and the crevices from which issue currents of heated air, are probably the causes of this phenomenon. The crater, like that of the Peak of Teneriffe, is surrounded by a small circular wall, which, examined with a good telescope, looks like a parapet. This is more distinctly seen on the southern declivity, when the beholder is placed either on the Lion mountain (*Puma-Urcu*), or on the banks of the small lake of Yuracoche. I have added beneath the plate, in order to show this peculiar structure of the volcano, a view of the southern brink of the crater, such as I have sketched it near the limit of the perpetual snows (at the absolute

height of four thousand four hundred and eleven metres), at Suniguaicu, on the ridge of porphyritic mountains, which joins Cotopaxi to the Nevado de Quelendanna.

The conic point of the Peak of Teneriffe is of easy access, rising from the midst of a plain covered with pumice stones, and on which a few tufts of *Spartium supranubium* vegetate. In scaling the volcano of Cotopaxi, it is extremely difficult to attain the inferior boundary of the perpetual snows, as we experienced in an excursion we made in the month of May, in the year 1802. The cone is surrounded by deep crevices, which at the moment of the eruptions bear down scoriæ, pumice stone, water, and blocks of ice, to Rio Napo, and Rio de los Alagues. After a near examination of the summit of Cotopaxi, we may venture to assert, that it would be impossible to reach the brink of the crater.

The greater the regularity in the form of the cone of this volcano, the more we are struck in finding, on the side to the south-east, a small mass of rock, half concealed under the snow, studded with points, and which the natives call the head of the Inca. The origin of this singular denomination is very uncertain. A popular tradition prevails in the country, that this isolated rock was heretofore a part of the top of Cotopaxi. The Indians relate, that the volcano, at

its first eruption, ejected far off a stony mass ; which, like the cap of a dome, covered the enormous cavity, that contains the subterraneous fire. Some pretend, that this extraordinary catastrophe took place a short time after the invasion of the kingdom of Quito by the Inca Tupac Yupanqui ; and that the rock, which is sketched in the tenth plate to the left of the volcano, is called the head of the Inca, because its fall was the ominous presage of the death of the conqueror. Others, still more credulous, affirm, that this mass of porphyry with basis of pitchstone\* was displaced in an explosion, that happened at the very moment when the Inca Atahualpa was strangled by the Spaniards at Caxamarca. It seems indeed certain, that an eruption of Cotopaxi took place when the army of Pedro Alvarado marched from Puerto Viejo to the elevated plains of Quito ; although Piedro de Cieca † and Garcilasso de la Vega ‡ do not name the mountain, that threw out ashes, the sudden fall of which affrighted the Spaniards. But to adopt the opinion, that at this epocha, for the first time, the rock called the Cabeza del Inca took its present place, we must suppose, that Cotopaxi had no former eruptions ; a sup-

\* *Pechstein-porphyr*, Wertner.

† *Chronica del Peru*, 1554, ch. 41, fol. 109.

‡ *Comentarios Reales*, lib. 2, ch. 2, vol. 2, p. 59.



position the more unfounded, as the walls of the palace of the Inca at Callo, built by Huayna Capac, contain stones of volcanic origin, thrown out by the mouth of Cotopaxi. We shall discuss in another place the important question, whether it be probable, that this volcano had already attained its present height, when the subterraneous fire issued from its summit; or whether a number of geological facts do not rather concur to prove, that the cone, like the Somma on Vesuvius, is composed of a great number of strata of lava heaped upon each other.

I sketched Cotopaxi and the Head of the Inca, to the west of the volcano, at the farm of Sienega, on the terrace of a beautiful country house belonging to our friend, the young Marquis of Maenza, who has lately inherited the title of Grandee, and that of Count of Punnellostro. In order to distinguish, in these views of the tops of the Andes, the mountains that are volcanoes still burning from those that have no eruptions, I have traced a slight smoke above the crater of Cotopaxi, though I saw none at the time I made the sketch. The house of Sienega, built by a person who was intimately connected with M. de la Condamine, is placed on the vast plain, which extends between the two branches of the Cordilleras, from the hills of Chisinche and Tiopullo as far as Hambato. The colossal



volcano of Cotopaxi, the pyramidal peaks of Ilinissa, and the Nevado de Quelendanna, open here at once on the spectator, and in dreadful proximity. This is one of the most majestic and most awful views I ever beheld in either hemisphere.

## MEXICAN MONUMENT

IN RELIEF,

FOUND AT OAXACA.

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PLATE XI.

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THIS relief, one of the most curious remains of Mexican sculpture, was found a few years ago, near the town of Oaxaca. The sketch was communicated to me by an eminent naturalist, Mr. Cervantes, professor of botany at Mexico, to whom we owe the knowledge of the new genera *cheirostemon*, *guardiola*, and many other plants, which will be published in the *Flora of New Spain* by Messrs. Sessé and Mocinno. The persons who sent this drawing to Mr. Cervantes assured him, that it was copied with the greatest care; and that the relief, sculptured on a blackish and very hard rock, was more than a metre in height.

They who have made a particular study of the Tolteck and Azteck monuments must be

struck both with the analogy and the contrasts between the relief of Oaxaca, and the figures which we find repeated in the hieroglyphical manuscripts, on the idols, and on the covering of several teocallis. Instead of those dwarfish men, who are scarcely five heads high, and who remind us of the most ancient Etruscan style, we distinguish in the relief represented in the eleventh plate a group of three figures, of slender form, and drawn too correctly for the infancy of the art. There is reason to think, that the Spanish painter, who copied this sculpture at Oaxaca, corrected the outlines in certain parts, perhaps unintentionally, particularly in sketching the hands and toes. But can we suppose, that he has changed the proportions of the whole figures? and is not this supposition devoid of probability, if we examine with what careful minuteness the forms of the heads, the eyes, and particularly the ornaments of the helmet, are traced? These ornaments, among which we distinguish feathers, ribands, and flowers; these noses, of extraordinary size, resemble those that are found in the Mexican paintings preserved at Rome, Veletri, and Berlin. It is only by comparing what was produced at the same epocha, and by people of the same origin, that we can form an exact idea of the style, which characterizes the different monuments; if we may be allowed to apply the word style to the analo-

gies we discover among a multitude of fantastic and singular forms.

We might also ask, whether the relief of Oaxaca does not date from a period, when, after the first arrival of the Spaniards, the Indian sculptors were already acquainted with some European works of art. In discussing this question we should recollect, that, three or four years before Cortez made himself master of the country of Anahuac, and before religious missionaries hindered the natives from graving any other figures than those of saints, Hernandez de Cordova, Antonio Alaminos, and Grixalva, had visited the Mexican coasts, from the island of Cozumel, and False Cape, in the peninsula of Yucatan, as far as the mouth of the river of Panuco. These conquerors had general communications with the inhabitants, whom they found well clothed, dwelling in populous towns, and more civilized than any other people on the New Continent. It is probable, that, in these military expeditions, crosses, rosaries, and images, objects of veneration among the catholics, were left with the natives; and it is possible also, that some of these images may have passed successively from the coast as far inland as the mountains of Oaxaca: but can we suppose, that the sight of a few figures correctly drawn could have determined the natives to abandon forms consecrated by the fashion of so

many ages? A Mexican sculptor might have faithfully copied the image of an Apostle no doubt; but in a country where, as in Hindostan and China, the natives adhered with the greatest perseverance to the manners, habits, and arts, of their ancestors, would he have dared to represent a hero, or a Mexican divinity, under a new and foreign form? Besides, the historical pictures of the Mexican painters after the arrival of the Spaniards, several of which are found in the remains of the collection of Boturini at Mexico, evidently prove, that this influence of the European arts on the taste of the American nations, and on the correctness of their drawings, was extremely slow.

I thought it indispensable to state the doubts, that might be suggested respecting the origin of the relief of Oaxaca, which I have had engraved at Rome after the sketch that was communicated to me; but I am far from giving any decided opinion on so extraordinary a monument, which I had no opportunity of examining myself. The architecture of the palace of Mitla, the elegance of the *Grecques* and labyrinths, which decorate the walls, are proofs, that the civilization of the Zapoteco nations was superior to that of the inhabitants of the valley of Mexico. We may therefore be less surprised, that the relief in question should have been found at Oaxaca, the ancient Huaxyacac,



which was the capital of the country of the Zapotecks. If I might presume to offer my own private opinion, I should observe, that it appears to me more natural to attribute this monument to Americans, who had yet had no communication with the Whites; than to suppose, that some Spanish sculptor, who had followed the army of Cortez, should have amused himself with a work in the Mexican style in honour of a vanquished people. The natives of the north-west coast of America have never been deemed very civilized; yet they have executed drawings, the just proportions of which have been admired by English navigators\*.

Whatever be the true state of the question, it seems certain, that the relief of Oaxaca represents a warrior returning from combat, and decked with the spoils of his enemies. Two slaves are placed at the feet of the conqueror. What is most striking in this composition are the noses of an enormous size, in the whole of six heads seen sideways. These noses are the essential characteristics of the monuments of Mexican sculpture. In the hieroglyphical pictures preserved at Vienna, Rome, and Veletri, or in the palace of the Viceroy at Mexico, the divinities, heroes, and even priests are all drawn with large aquiline noses, often pierced towards

\* Dixon's Voyage, p. 272.

the point, and ornamented with the amphibæna, or mysterious double-headed serpent. It is possible, that this extraordinary physiognomy might indicate a race of men very different from that which now inhabits these countries, whose noses are broad, flat, and of a moderate size ; but it is also possible, that the Mexican people might have thought, with the prince of philosophers \*, that there was something majestic and royal (βασιλικον) in a large nose, and might have considered it in their reliefs and in their paintings, as the symbol of power and moral worth.

The pointed form of the heads is not less striking in the Mexican drawings, than the size of the noses. If we examine osteologically the skulls of the natives of America, we see, as I have elsewhere remarked, that there is no race on the Globe in which the frontal bone is more flattened, or which have less forehead †. This extraordinary flattening exists among people of the copper-coloured race, who have never been acquainted with the custom of producing artificial deformities, as is proved by the skulls of Mexican, Peruvian, and Azteck Indians, which M. Bonpland and myself brought to Europe,

\* Plato, de Republica, lib. 5.

† Blumenbach, Decas quinta Craniorum, 1808, p. 14, tab. 46.

and several of which are deposited in the Museum of Natural History at Paris. The negroes prefer the thickest and most prominent lips ; the Calmucks perceive the line of beauty in turned up noses. M. Cuvier \* observes, that the Grecian artists, in the statues of heroes, raised the facial line from 85 to 100 degrees, or beyond the natural form. I am led to think, that the barbarous custom, among certain savage tribes in America, of squeezing the heads of children between two planks, arises from the idea, that beauty consists in this extraordinary compression of the frontal bone, by which nature has characterized the American race. It is no doubt from following this standard of beauty, that even the Azteck people, who never disfigured the heads of their children, have represented their heroes and principal divinities with heads much flatter than any of the Caribs I saw on the lower Orinoco.

The figure of the warrior in the relief of Oaxaca presents a very extraordinary mixture of costumes. The ornaments of his headdress, which has the shape of a helmet ; those of the standard (*signum*), which he holds in the left hand, and on which we see a bird, as on the standard of Ocotelolco ; are found in all the Azteck paintings. The vest with the long and

\* Leçons d'Anatomie comparée, t. 2, p. 6.

narrow sleeves resembles the garment, which the Mexicans name *ichcahuepilli*; but the net, which covers the shoulders, is an ornament no longer to be met with among the Indians. Below the girdle is the spotted skin of a jaguar, with its tail. It is related by the Spanish historians, that the Mexican warriors, in order to appear more terrible in combat, wore enormous wooden helmets in the form of a tyger's head, the jaws of which were armed with the teeth of this animal. Two skulls, no doubt those of vanquished enemies, are tied to the girdle of the conqueror. His feet are covered with a kind of buskin, which reminds us of the *σκηλεαι*, or *caligæ*, of the Greeks and Romans.

The slaves, represented sitting cross-legged at the feet of the conqueror, are very remarkable both for their attitudes and their nudity. That on the left is like the figure of those saints, which we frequently see in Hindoo paintings, and which the navigator Roblet found on the north-west coast of America, among the hieroglyphical paintings of the natives of Cox's channel\*. It would be easy to trace, in this relief, the Phrygian cap and the apron (*περιζώμα*) of the Egyptian statues, were we to follow the steps of a learned writer†, who, led away by the

\* Marchand's Voyage, vol. 1, p. 312.

† Court de Gibelin.

warmth of his imagination, thought he had discovered on the New Continent Carthaginian inscriptions and Phœnician monuments \*.

\* See Archæologia, or Miscellaneous Tracts relating to Antiquity ; published by the Antiquaries of London, vol. 8, p. 290.



## GENEALOGY

OF THE

## PRINCES OF AZCAPOZALCO.

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PLATE XII.

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Two fragments of hieroglyphical paintings, both posterior to the arrival of the Spaniards on the coasts of Anahuac, are engraved on this plate. The originals, from which these drawings are copied, belong to the Azteck manuscripts, which I brought from New Spain, and which are deposited in the royal library at Berlin. The plate, from the manner in which it is engraved, is a perfect imitation, not only of the drawing, but of the colour of the Mexican paper; and reminds us of the curious envelope of a mummy, that was preserved for some time at Strasbourg, in a private collection, and now forms a part of the great and valuable collections of the Institute of Egypt at Paris.

The paper, which was used for the hieroglyphical paintings of the Azteck people, has a

great resemblance to the Egyptian paper, made with the fibres of the reed (*cyperus papyrus*). The plant, which was employed in Mexico for the fabrication of paper, is known in our gardens under the name of aloes. It is the *pite* (agave Americana), called *metl*, or *maguey*, by the people of the Azteck race. The mode of making this paper was very similar to that employed in the South Sea islands with the bark of the *paper mulberry tree* (*broussonetia papyrifera*). I have seen pieces three metres long and two broad. The agave is cultivated at present not for paper-making, but for preparing with its juice, at the unfolding of the stalk and flowers, the intoxicating liquor called *octli*, or *pulque*; for the *pite* or *metl* may be used as a substitute at the same time for the hemp of Asia, the paper reed of Egypt, and the vine of Europe.

The painting, a copy of which is at the bottom of the twelfth plate, is five decimetres long and three broad. It is well preserved, the colours are vivid, and the agave paper yellowed by time is of a very fine and equal texture. It appears that this fragment of hieroglyphic writing, which I purchased at Mexico, at the sale of Mr. Gama's collection, was formerly a part of the museum of the chevalier Boturini Benaducci. This Milanese traveller had crossed the seas with no other view, than to study on the spot the

history of the native tribes of America; but in traversing the country to examine its monuments, and make researches into its antiquities, he had the misfortune to excite the suspicion of the Spanish government. After having been deprived of all the fruits of his labours, he was sent in 1736, as a state-prisoner, to Madrid. The King of Spain declared him innocent, but this declaration did not restore to him his property; and his collections, the catalogue of which Boturini published at the end of his *Essay on the Ancient History of New-Spain*, printed at Madrid, lay buried in the archives of the Viceroyalty at Mexico. These valuable relics of the culture of the Aztecks were preserved with so little care, that there scarcely exists at present an eighth part of the hieroglyphical manuscripts taken from the Italian traveller.

They who, before Boturini, were in possession of the genealogical painting, which we now publish, have added to it explanatory notes, sometimes in Mexican, and sometimes in the Spanish language. We see by these notes, that the family, whose genealogy is represented in the drawing, is that of the lords (*tlatoanis*) of Azcapozalco. The small territory of these princes, to which the Tepanecks gave the pompous name of kingdom, was situate in the valley of Mexico, near the western bank of the lake of Tezcuco, to the north of the river Escapuzalco. Torquemada

asserts, that these princes, jealous of the antiquity of their nobility, carried back their origin as far as the first age of our era. They were neither of the Mexican nor Azteck race; they considered themselves as descendants of the Acolhuan kings, who had governed the country of Anahuac before the arrival of the Aztecks, by whom the princes of Azcapozalco were made tributaries in the eleventh *calli* of the Mexican era, which corresponds to the year 1425 of the Christian.

The genealogical painting, which we publish, appears to contain twenty-four generations, indicated by as many heads placed one above another. We must not be surprised at never seeing more than one son; since among the poorest Indians, that are tributary, every inheritance descends to the eldest son\*. The genealogy begins with a prince named Tixlpitzin, whom we must not confound with Tecpaltzin, the chief of the Aztecks, in their first migration from Aztlan; or with Topiltzin, the last king of the Toltecks: but we shall perhaps wonder at not finding, instead of the name of Tixlpitzin, that of Acolhuatzin, first king of Azcapozalco, of the family of the Citins, who, according to the tradition of the natives, reigned

\* Gomara, Hist. de la Conquista de Mexico; 1553, f. 121.

in a very distant country, north of Mexico. Near the fourteenth head is written the name of Vitznahuatl. If this prince were the same person with a king of Huexotla, whom the Mexican historians name also Vitznahuatl, and who lived about the year 1430, the genealogy of the family of Azcapozalco would go back to the year 1010 of our era, in reckoning only thirty years for each generation. But how then can we explain the ten following generations, as the drawing appears to have been made towards the end of the sixteenth century? Neither shall I decide why the year 1565 is marked between the names of the two princes, Anahuacatzin and Quauh-temotzin. We know, that the last of these names is that of the unfortunate Azteck king, whom Gomara falsely names Quahutimoc; and who, by order of Cortez, was hung up by the feet in 1521, as is proved by a very valuable hieroglyphical history, preserved in the Convent of San Felipe Neri, at Mexico\*. But how could this king, nephew of Montezuma, figure in the family of the lords or tlatoanis of Azcapozalco?

It is certain, that, when the last of these princes ordered the genealogical painting of his ancestors to be composed, his father and grandfather were still living. This circumstance is

\* See my Political Essay on New-Spain, p. 185.



clearly indicated by the small *tongues* placed at some distance from the mouth. A dead man, say the natives, is reduced to eternal silence : according to them, to live, is to speak ; and, as we shall see presently, to speak much is a mark of power and nobility. These figures of tongues are also met with in the Mexican picture of the Deluge, which Gemelli published from a manuscript at Siguenza ; in which we see men born dumb, who disperse themselves to repopulate the Earth ; and a bird, that distributes among them thirty-three different tongues. In the same manner a volcano, on account of the subterraneous noise heard sometimes in its neighbourhood, is figured by the Mexicans as a cone with several tongues hovering over its top : a volcano is called *the mountain that speaks*.

It is remarkable enough, that the Mexican painter should have given only to the three persons, who were living in his time, the diadem (*copilli*) which is a sign of sovereignty. We meet with the same headdress, but without the knot which reaches towards the back, in the figures of the kings of the Azteck dynasty, published by the Abbé Clavigero. The last branch of the lords of Azcapozalco is represented sitting on an Indian chair, with his feet at liberty : dead kings, on the contrary, are figured not only without tongues, but with their feet wrapped up in the royal cloak (*xiuh'tilmatli*) which gives





*A. L'Amant in Stronglyphics.*

these images a great resemblance to Egyptian mummies. It is almost superfluous in this place to notice the general observation, that, in all the Mexican paintings, the objects tied to a head by means of a thread, indicate to those acquainted with the language of the natives, the names of the persons drawn by the artist. The natives pronounce these names, when they see the hieroglyphic. Chimalpopoca signifies a buckler that smokes; Acamapitzin, a hand that holds reeds. Thus, to indicate the names of these two kings, predecessors of Montezuma, the Mexicans painted a buckler and a fist tied by a thread to two heads ornamented with a royal fillet. I have remarked, that in the pictures made after the conquest, the valiant Pedro Alvarado was drawn with two keys placed behind the neck, in allusion, no doubt, to the keys of St. Peter, whose images were every where seen by the people in the Christian churches. I do not understand the meaning of the marks of feet, in the genealogical picture, behind the heads. In other Azteck paintings, this hieroglyphic indicates roads, migrations, and sometimes the direction of a movement.

*A Law-suit in Hieroglyphical Writing.*

Amidst the enormous quantity of paintings found among the Mexican nations by the first

conquerors, a very considerable number was destined to serve as evidence in litigious causes. The fragment added to the genealogy of the lords of Azcapozalco is an example of this kind. It is a paper of a law-suit respecting the possession of an Indian farm. Under the dynasty of the Azteck kings, the profession of a lawyer was unknown in Mexico. The contending parties appeared in person to plead their cause, either before the judge of the district, called *teuctli*; or before the high courts of justice, called *tlacatecatl* or *cihuacohuatl*. As the sentence was not immediately pronounced after hearing the parties, each of the disputants was interested in leaving with the judges a hieroglyphical painting, to remind them of the principal object of the dispute. When the king presided in the assembly of the judges, which took place every twenty, and in certain cases every fourscore days, these law papers were placed before the monarch. In criminal causes, the picture represented the person accused, not only at the moment when the crime was committed, but also in the different circumstances of his life preceding this action. The king, in pronouncing the sentence of death, made with the point of a dart a scratch across the head of the culprit represented in the picture.

The use of these paintings in law-suits was continued in the Spanish tribunals long after the conquest. The natives, unable to address the

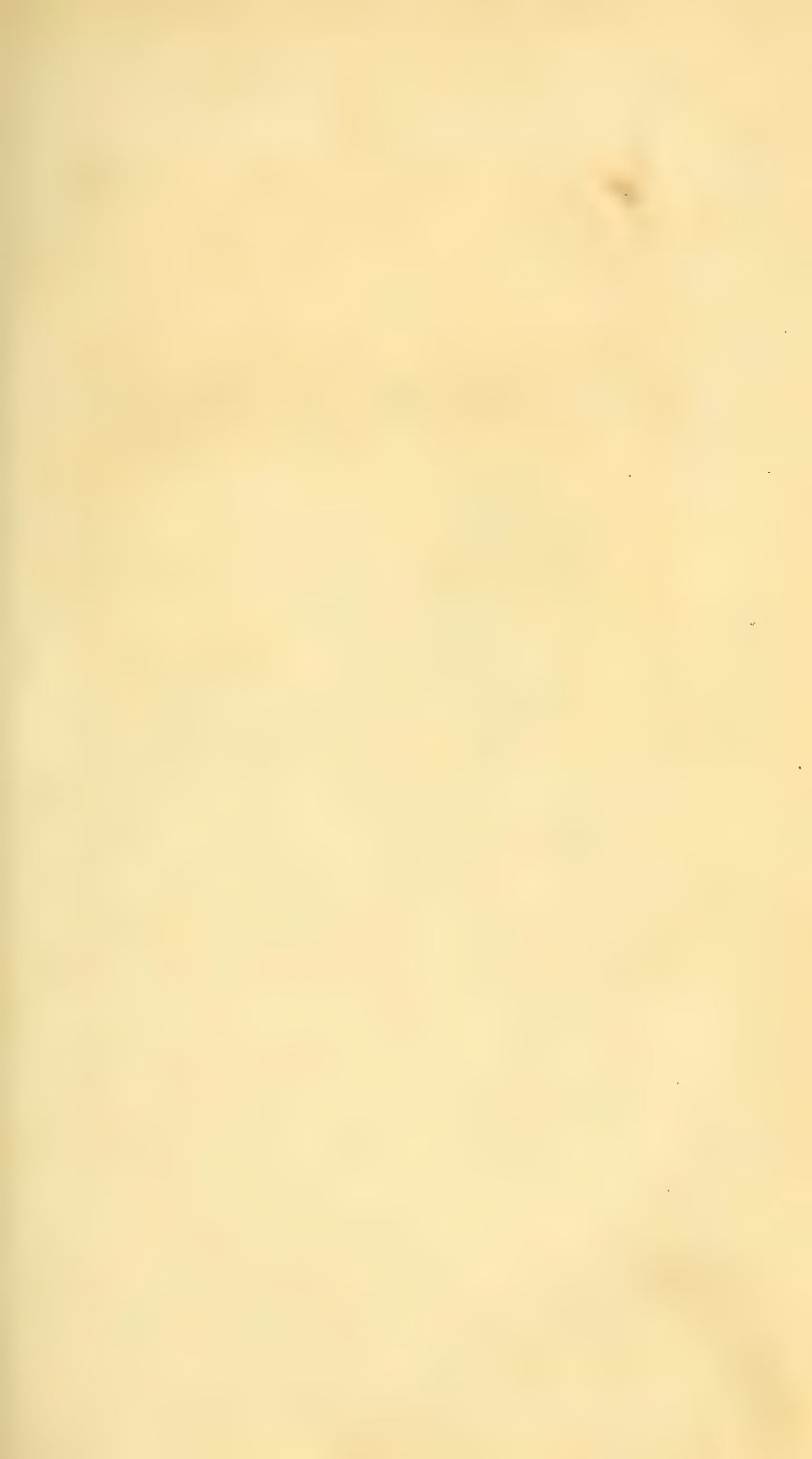


judges except through an interpreter, considered the employment of hieroglyphics as doubly necessary. They were presented before the several courts of justice in New-Spain (the *Real Audiencia*, the *Sala del Crimen*, and the *Juzgado de Indios*) as late as the beginning of the seventeenth century. When the Emperor Charles V. with a view to encourage the culture of the arts and sciences in these distant regions, founded, in 1553, the University of Mexico, three professorships were established ; one for teaching the Azteck language, another for the Otomite, and a third for the explanation of hieroglyphical paintings. It was for a long time deemed indispensable to have attorneys, pleaders, and judges, who were able to read the titles, the genealogical paintings, the ancient code of the laws, and the list of taxes (*tributos*) which each feudatory was obliged to pay his lord. Two professors of the Indian language still exist at Mexico ; but the chair destined for the study of the Azteck antiquities has been suppressed. The use of paintings is entirely lost ; not because the knowledge of the Spanish language has increased among the natives, but because, from the present organization of the tribunals, it is found more useful to apply to lawyers to plead the cause of the people before the judges.

The painting represented on the twelfth plate seems to indicate a law-suit between some natives

and Spaniards. The affair in litigation is a farm, the plan of which is traced in orthographical projection. We see the high-road pointed out by the marks of the feet ; the houses sketched in profile ; an Indian, whose name indicates a bow ; and Spanish judges sitting in chairs with the laws before them.

The Spaniard, placed immediately above the Indian, was probably called Aquaverde ; the hieroglyphic of water, painted green, being figured behind his head. The tongues are very unequally divided in this picture. Every thing portrays the state of a vanquished country : the native scarcely dares defend his cause, while the strangers with long beards talk much and loud, as the descendants of a conquering people.





*Aztec hieroglyphical MS. in the  
Vatican Library.*

AN AZTECK  
HIEROGLYPHICAL MANUSCRIPT,

PRESERVED IN THE  
LIBRARY OF THE VATICAN.

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PLATE XIII.

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THE Mexican paintings, a very small number of which has reached our times, excite a double interest, both from the light they throw on the mythology and history of the first inhabitants of America, and the apparent connexion with the hieroglyphical writing of certain nations of the Old Continent. We shall bring together in this work whatever can afford information with respect to the communication which at the most distant periods seems to have taken place between groups of nations separated by deserts, by mountains, or by seas; and shall here mark the result of our investigations on the hieroglyphical paintings of the Americans.

Characters are found in Ethiopia, which have an astonishing resemblance with those of the



ancient Sanscrit, and particularly with the inscriptions in the caves of Canara, the construction of which preceded all the known periods of Indian history\*. The arts appear to have flourished at Meroe, and at Axoum, one of the most ancient cities of Ethiopia, before Egypt rose from a state of barbarism. A celebrated writer, deeply versed in the history of India, Sir William Jones†, believed, that he had traced the same people in the Ethiopians of Meroe, the first Egyptians, and the Hindoos. Yet it is almost certain, that the Abyssinians, whom we must not confound with the autochthones of Ethiopia, were an Arabian tribe; and, according to the observation of M. Langles, the same hamyaritic characters, which we discover in the east of Africa, still decorated, in the fourteenth century of the vulgar era, the gates of the city of Samarcand. Some connexion therefore undoubtedly existed between Habesch, or ancient Ethiopia, and the elevated plain of central Asia.

A long struggle between two religious sects, the Brahmans and the Bouddhists, terminated by the emigration of the Chamans to Thibet, Mongolia, China, and Japan. If tribes of the

\* Notes, by M. Langles, to Norden's Travels, vol. 3, p. 299, 349.

† Asiatic Researches, vol. 3, p. 5.

Tartar race have passed over to the north-west coast of America; and thence to the south and the east, towards the banks of Gila, and those of the Missouri, as etymological \* researches seem to indicate; we should be less surprised at finding, among the semi-barbarous nations of the new continent, idols and monuments of architecture, a hieroglyphical writing, and exact knowledge of the duration of the year, and traditions respecting the first state of the world, recalling to our minds the sciences, the arts, and the religious opinions of the Asiatic nations.

In the study of the history of mankind, as in that of the immensity of languages spread over the face of the Globe, it would be losing ourselves in a labyrinth of conjectures, were we to assign a common origin to so many races, and so many different tongues. The roots of the Sanscrit found in the Persian tongue, the great number of roots of the Persian, and even of the Pahlavi, which we discover in the tongues of Germanic origin †, give us no right to consider the Sanscrit, the Pahlavi, or the ancient language of the Medes, the Persian, and the German, as derived from one and the same

\* Vater ueber Amerika's Bevolkerung, p. 155, 169.

† Adelung's Mithridates, Th. 1, p. 277, Schlegel, ueber Sprache and Weisheit der Inder, p. 7.

source. It would no doubt be absurd to suppose the migration of Egyptian colonies wherever pyramidical monuments and symbolical paintings are found ; but how can we avoid being struck with the traces of resemblance offered by the vast pictures of manners, of arts, of language, and traditions, which exist at present among nations at the most remote distance from each other ? Why should we hesitate to point out, wherever they occur, the analogies of construction in languages, of style in monuments, and of fictions in cosmogonies, although we may be unable to decide what were the secret causes of these resemblances, while no historical fact carries us back to the epocha of the communications, which existed between the inhabitants of different climates ?

In fixing our attention on the graphical means which the natives employed to express their ideas, we find real hieroglyphics, sometimes curiologic, sometimes tropical, such as those, the use of which appears to have passed from Ethiopia into Egypt ; symbolic characters composed of numerous keys, destined to speak rather to the eyes than the ear, and expressing whole words, like the Chinese ; or syllabical characters, like those of the Mantchou Tartars, in which the vowels are combined in one figure with the consonants, but which may also be restored into simple letters ; finally, real

alphabets, which offer the highest degree of perfection in the analysis of sounds, and of which some, for instance the Corean, according to the ingenious observation of M. Langles\*, seem still to indicate the transition from hieroglyphics to alphabetical writing.

In the immense extent of the new continent, we see nations which have reached a certain degree of civilization; we observe forms of government, and institutions, which could only have been the effect of a long struggle between the prince and the people, the priesthood and the magistracy; and we find languages, some of which, such as the Greenland, the Cora, the Tamanac, the Totonac, and the Quichua †, display a richness of grammatical forms, which we trace nowhere in the old continent, except at Congo, and among the Biscayans, who were the remains of the ancient Cantabrians: but amid these marks of civilization, and this progressive perfection of language, it is remarkable, that no native people of America had attained that analysis of sounds, which leads to the most admirable, we might say the most miraculous of all inventions, an alphabet.

We perceive that the use of hieroglyphical

\* Norden's Travels, Langles' edition, vol. 3, p. 296.

† Archiv fuer Ethnographie, B. 1, s. 345. Vater s 206.

paintings was common to the Toltecks, the Tlascaltecks, the Aztecks, and several other tribes, which, since the seventh century of our era, appear successively on the elevated plain of Anahuac; but we nowhere find alphabetic characters; and we are led to think, that the progressive perfection of symbolic signs, and the facility with which objects are painted, had prevented the introduction of letters. We may cite, in support of this opinion, the example of the Chinese, who during thousands of years have contented themselves with four-score thousand characters, composed of two hundred and fourteen keys, or radical hieroglyphics: but do we not discover among the Egyptians the simultaneous use of an alphabet, and hieroglyphic writing, of which we have undoubted proof in the valuable rolls of papyrus found in the swathings of several mummies, and represented in M. Denon's Picturesque Atlas \*?

Kalm† relates, in his Travels in America, that Mr. Verandrier had discovered, in 1746, in the savannahs of Canada, nine hundred leagues west of Montreal, a stone tablet fixed in a sculptured pillar, and on which were strokes that were taken for a Tartarian inscription. Several Jesuits at Quebec assured the Swedish traveller

\* Denon's Voyage en Egypt, Pl. 136 et 137.

† Kalm's Reise, B. III, p. 416.



that they had examined this tablet, which the Chevalier Beauharnois, then governor of Canada, had sent to M. de Maurepas in France. We cannot but deeply regret having no farther knowledge of a monument, so interesting to the history of man. But were there any persons residing at Quebec capable of judging of the character of an alphabet? and if this pretended inscription had been really recognized in France as a Tartarian inscription, is it probable, that an enlightened minister, a protector of the arts, would not have ordered it to be published?

The Anglo-American antiquaries have made known an inscription, which is supposed to be Phœnician, and which is engraved on the rocks of Dighton, in Narraganset bay, near the banks of Taunton river, twelve leagues south of Boston. Drawings of this inscription have been repeatedly published, from the end of the 17th century down to the present time by Danforth, Mather, Greenwood, and Sewell; but so dissimilar, that it is difficult to recognize them as copies of the same original. The natives who inhabited these countries, at the time of the first European settlements, preserved an ancient tradition, according to which, strangers in wooden houses had sailed up Taunton river, formerly called Assoonet. These strangers, after having conquered the red men, had en-

graved marks in the rock, which is now covered by the waters of the river. Count Gebelin does not hesitate, with the learned Dr. Stiles, to regard these marks as a Carthaginian inscription. He says, with that enthusiasm which is natural to him, but which is highly injurious in discussions of this kind, that this inscription comes happily at the moment from the new world, to confirm his ideas on the origin of nations; and that it is clearly demonstrated to be a Phœnician monument, a picture which, in the foreground, represents an alliance between the American people and the foreign nation, coming by the winds of the north from a rich and industrious country.

I have carefully examined the four drawings of the celebrated stone of Taunton river, which Mr. Lort\* published in London in the *Memoirs of the Antiquarian Society*. Far from recognizing a symmetrical arrangement of simple letters and syllabic characters, I discover a drawing scarcely traced, like those that have been found on the rocks of Norway†, and in almost all the countries inhabited by the Scandinavian nations. In this sketch we distinguish, from the form of the heads, five hu-

\* Account of an ancient Inscription, by Mr. Lort, *Archæologia*, vol. 3, p. 290.

† *Suhm, Samlinger til ten Danske Historie*, B. 2, p. 215.

man figures, surrounding an animal with horns, much higher in the fore than the hinder part of the body.

In the voyage made by M. Bonpland and myself to ascertain the communication between the rivers Orinoco and Amazon, we were told of an inscription, which it was asserted was found in the chain of granitic mountains, that, in the seventh degree of latitude, extends from the Indian village of Uruana, or Urbana, as far as the western banks of the Caura. A missionary, Ramon Bueno, a Franciscan monk, having accidentally entered a cavern formed by the separation of some ledges of rocks, beheld in the middle of the cave a large block of granite, on which he saw what he believed to be characters formed into various groups, and ranged on the same line. Unfortunately, the difficult circumstances, in which we were placed on our return from Rio Negro to St. Thomas de la Guayana, did not permit us to verify personally this observation. The missionary gave me a copy of part of these characters, of which the following is an engraving.



Some resemblance to the Phœnician alphabet

may be discovered in these characters; but I much doubt whether the good monk, who seemed to be but little interested about this pretended inscription, had copied it very carefully. It is somewhat remarkable, that out of seven characters there were none several times repeated; I have inserted them merely as worthy of engaging the attention of the learned, who may hereafter visit the forests of Guyana.

It is also remarkable, that in this savage and desert country, where P. Bueno found letters engraven in granite, are a great number of rocks, which at considerable heights are covered with figures of animals, representations of the sun, the moon, and the stars, and other hieroglyphical signs. The natives relate, that their ancestors, in the time of the *great waters*, came in canoes to the top of these mountains: and that the stones were then in so plastic a state, that men could trace marks on them with their fingers. This tradition indicates a tribe in a different state of civilization from that of the people by which it was preceded, discovering an absolute ignorance of the use of the chisel, and every other metallic tool.

From the whole of these facts it results, that there exists no certain proof of the knowledge of an alphabet among the Americans. In researches of this kind we cannot be too careful not to confound what may be the effect of

chance, or idle amusement, with letters or syllabic characters. Mr. Truter\* relates, that in the southern extremity of Africa, among the Betjuanas, he saw children busy in tracing on a rock, with some sharp instrument, characters which bore the most perfect resemblance with the P and the M of the Roman alphabet; notwithstanding which, these rude tribes were perfectly ignorant of writing.

This want of letters observed in the new continent, at the time of its second discovery by Christopher Columbus, leads to the idea, that the tribes of the Tartar or Mongul race, which we may suppose to have passed from the east of Asia to America, were not in possession of alphabetical writing; or what is less probable, that, having relapsed into barbarism under the influence of a climate less favorable to the display of the understanding, they had lost this wonderful art, known only to a very small number of individuals. We shall not here examine the question, whether the Devanagari alphabet is of remote antiquity on the banks of the Indus and the Ganges; or whether, as Strabo† asserts from Megasthenes, the Hindoos were ignorant of writing before the conquests of Alexander. Farther to the east and the north in the region

\* Bertuch, *Geogr. Ephem.* B. 12, s. 67.

† Strabo, lib. 15, p. 1035—1044.



of monosyllabic languages, as in that of the Tartarian, Samoiède, Ostiack, and Kamtschadale tongues, the use of letters wherever it is at present found, was introduced very late. It seems indeed probable, that it was the Christian sect of Nestorians, who communicated the Stranghelo alphabet to the Oighours and the Mantchou Tartars ; an alphabet, which in the northern regions of Asia is still more recent, than the Runic characters in the north of Europe. We need not, therefore, suppose the communications between eastern Asia and America to have been of very remote antiquity, in order to comprehend why this latter part of the world had not been instructed in an art, which for a long series of ages was unknown except in Egypt, in the Phœnician and Grecian colonies, and in the small space lying between the Mediterranean, the Oxus, and the Persian gulf.

When we examine the history of those nations among which the use of letters is unknown, we find almost every where, in both hemispheres, that men have attempted to paint the objects which strike their imagination, to represent things by indicating a part for the whole, to compose pictures by grouping figures in symbolical sketches, and thus to perpetuate the memory of certain remarkable facts. The Delaware Indian, in scouring the woods, carves

strokes on the bark of the trees, to mark the number of men and women he has killed of the enemy: the conventional sign, which indicates the skin stripped from the head of a woman, differs by a simple stroke only from that which characterizes the scalp of a man. Were we to call hieroglyphic every painting of ideas by things, there is not, as Mr. Zoega\* has well remarked, a corner of the Globe, in which we should not find hieroglyphical writing; but this same learned person, who has deeply studied the Mexican paintings, observes also, that we must not confound hieroglyphical writing with the representation of an event, with pictures in which the objects are in the state of action with one another.

The first missionaries who visited America, Valades and Acosta†, have already called the Azteck paintings a writing similar to that of the Egyptians. If Kircher, Warburton, and other learned men, have since contested the propriety of this expression, it is because they have not distinguished the *paintings of a mixed kind*, in which real hieroglyphics, sometimes curiological, sometimes tropical, are added to the natural representation of an action, from *simple hierogly-*

\* Zoega, p. 525—534.

† Rhetorica Christiana, auctore Didaco Valades; Romæ, 1579, P. 2, c. 27, p. 93. Acosta, Lib. 6, c. 7.

*phical writing*, such as is found, not on the *pyramidion*, but on the great faces of the obelisks. The famous inscription of Thebes, cited by Plutarch, and by Clement of Alexandria \*, the only one, the explanation of which has reached us, expressed by the hieroglyphics of a child, an old man, a vulture, a fish, and a hippopotamus, the following sentence: " You who are born, and who are to die, know, that the Eternal hates impudence." A Mexican, to express the same idea, would have represented the great spirit, Teotl, chastising a criminal ; certain characters placed above two heads, would have been sufficient to indicate the age of the child, and that of the old man : he would have *individualized* the action, but the style of his hieroglyphical paintings would not have furnished him with the means of giving a general expression to the sentiment of hatred and vengeance.

According to the ideas which the ancients have transmitted to us of the hieroglyphical inscriptions of the Egyptians, it is very probable, that they might have been read, as we read Chinese books. The collections, which we improperly call Mexican manuscripts, contain a great number of paintings, which may be inter-

\* Plut. de Iside ; ed. Par. 1624, Vol. 2, p. 363, F. Clem Alexand. Stromat. Vol. 5, c. 7, ed. Potter, Oxon, 1715, Vol. 2, p. 670, lin. 30.

preted or explained like the sculptures on the Trajan column ; but we find only a very small number of characters susceptible of being read. The Azteck people had real simple hieroglyphics for water, earth, air, wind, day, night, the middle of the night, speech, motion : they had also for numbers, for the days and the months of the solar year. These signs, added to the painting of an event, marked in a very ingenious manner, whether the action passed during the day or the night ; the age of the persons they wished to represent ; whether they had been conversing, and who among them had spoken most. We even find among the Mexicans vestiges of that kind of hieroglyphics, which is called *phonetic*, and which indicates relations, not with things, but with the language spoken. Among semi-barbarous nations, the names of individuals, of cities, and mountains, have generally some allusion to objects that strike the senses, such as the form of plants and animals, fire, air, or earth. This circumstance has given the Azteck people the means of being able to write the names of cities, and those of their sovereigns. The verbal translation of Axajacatl, is *face of water* ; that of Ilhuicamina, *arrow which pierces the sky* ; thus to represent the kings Moteuczoma Ilhuicamina and Axajacatl, the painter united the hieroglyphics of water and the sky to the figure of a head and of an arrow. The names of the cities



of Macuilxochitl, Quauhtinchan, and Tehuilojocan, signify, *five flowers, house of the eagle, and place of mirrors*: to indicate these three cities, they painted a flower placed on five points, a house from which issued the head of an eagle, and a mirror of obsidian. In this manner the union of several simple hieroglyphics indicated compound names, and by signs which spoke at the same time to the eye and the ear: the characters which designated towns and provinces were often drawn also from the productions of the soil, or the occupations of the inhabitants.

From the whole of these researches it follows, that the Mexican paintings which have been preserved to our times, offer a great resemblance not with the hieroglyphical writings of the Egyptians, but with the rolls of papyrus found in the swathings of the mummies; which we may also consider as paintings of a mixed kind, because they unite symbolical and isolated characters with the representation of an action. We recognize, in these rolls of papyrus, initiations, sacrifices, allusions to the state of the soul after death, tributes paid to conquerors, the beneficent effects of the inundations of the Nile, and the labours of agriculture. Among a great number of figures represented in action, or in connexion with each other, we observe real hieroglyphics, those isolated characters which belonged to writing; and it is not only on the



papyri, and the swathings of mummies, but also on the obelisks, that we find traces of this mixed kind, which joins painting with hieroglyphical writing. The lower part and the point of Egyptian obelisks present in general a group of two figures, which are in a state of action with respect to each other, and which ought not to be confounded with the isolated characters of symbolical writing.

When we compare the Mexican paintings with the hieroglyphics, that decorated the temples, the obelisks, and perhaps even the pyramids of Egypt; and reflect on the progressive steps, which the human mind appears to have followed in the invention of graphic means fitted to express ideas; we see, that the nations of America were very distant from that perfection which the Egyptians had obtained. The Aztecks were indeed but little acquainted with simple hieroglyphics; they could represent the elements, and the relations of time and of place; but it is only by a great number of these characters, susceptible of being employed separately, that the painting of ideas becomes easy, and approximates to writing. We find among the Aztecks the germes of phonetic characters: they know how to write names, by uniting certain signs which are associated with sounds: this contrivance might have led them to the beautiful discovery of giving an alphabetic form to their simple hieroglyphics;

but ages would have elapsed, before these nations of mountaineers, who adhered to their manners and customs with the same invincible obstinacy as the Chinese, the Japanese, and the Hindoos, could have raised themselves to the decomposition of words, the analysis of sounds, the invention of an alphabet !

Notwithstanding the extreme imperfection of the hieroglyphical writing of the Mexicans, their paintings were good substitutes for books, manuscripts, and alphabetic characters. In the time of Montezuma, thousands of persons were employed in painting ; either forming new compositions, or copying pictures which already existed. The facility with which they made paper of the leaves of maguey, or pite (the agave), no doubt greatly contributed to render the use of painting so frequent. The paper reed (*cyperus papyrus*) of the Old Continent grows only in moist and temperate places ; the pite, on the contrary, flourishes equally in the valleys, and on the loftiest mountains ; it vegetates in the warmest regions of the Globe, and on elevated plains, where the thermometer descends to the freezing point. The Mexican manuscripts (*codices Mexicani*), that have been preserved, are some of them painted on deer skins, others on cotton, or paper of maguey. It is very probable, that among the Americans, as formerly among the Greeks, and other people of the Old World,

the use of skins, tanned and prepared, preceded that of paper : the Toltecks, at least, seem already to have employed hieroglyphical painting at that remote era, when they inhabited the northern provinces, the climate of which is unfit for the cultivation of the agave.

Among the Mexican people, the figures and symbolic characters were not traced on separate leaves. Whatever was the substance employed for manuscripts, they were seldom destined to form rolls ; but were almost always folded in zigzag, in a particular manner, like the mounts of our fans. Two tablets of light wood were pasted at the ends, one at top, the other at bottom, so that, before the painting was unfolded, the manuscript had the most perfect resemblance with our bound books. By this arrangement, on opening a Mexican manuscript as we open our books, we can see only half of the characters at one time, those which are painted on the same side of the skin, or paper of maguey : to examine the whole of the pages, if the different folds of a band, which is often twelve or fifteen metres in length, can be called pages, we must extend the whole manuscript first from the left to the right, and then from the right to the left. In this respect the Mexican paintings are perfectly similar to the Siamese manuscripts, preserved in the public library at Paris, which are also folded in zigzag.

The volumes, which the first missionaries of New Spain improperly called Mexican books, contained notions on a great number of very different subjects ; they consisted of historical annals of the Mexican empire, rituals indicating the month and the day on which sacrifices were to be made to particular divinities, cosmogonical and astrological representations, papers relating to lawsuits, documents respecting the divisions of property in a district, lists of tributes payable at certain periods of the year, genealogical tables according to which inheritances or the rule of succession in families was regulated, calendars showing the intercalations of the civil year and religious year, and paintings indicating the pains and penalties, which the judges were to inflict for crimes. My travels in different parts of America and Europe procured me the advantage of examining a greater number of Mexican manuscripts, than Zoega, Clavigero, Gama, the Abbé Hervas, the ingenious author of the *Lettere Americane*, Count Rinaldo Carli, and other learned persons, who, since Boturini, have written on these monuments of the ancient civilization of America. In the valuable collection preserved in the palace of the Viceroy at Mexico, I saw fragments of paintings relative to each of the subjects I have just enumerated.

We cannot avoid being struck with the great resemblance, which we observe between the



Mexican manuscripts preserved at Veletri, at Rome, at Bologna, at Vienna, and at Mexico ; they seem at first sight to be copies of each other ; they are all extremely incorrect in the outlines, but we find a scrupulous attention to the details, and great strength in the colouring, which is placed so as to produce the most striking contrasts. The figures are in general dwarfish with respect to the body, like those of the Etruscan reliefs : but in correctness of drawing they are far beneath the most imperfect paintings of the Hindoos, the Chinese, the Japanese, or the people of Thibet. We see in the Mexican paintings heads of an enormous size, a body extremely short, and feet which, from the length of the toes, look like the claws of a bird. The heads are always drawn in profile, though the eye is placed as if the figure presented a full view. All this denotes the infancy of the art ; but we must not forget, that people who express their ideas by paintings, and who are compelled by their state of society to make frequent use of mixed hieroglyphical writing, attach as little importance to correct painting, as the literati of Europe to a fine hand-writing in their manuscripts.

It cannot be denied, that the Mexican people belong to a race of men, who, like several Tartar and Mongul hordes, are extremely fond of imitating the form of objects. Every where in



New Spain, as well as in Quito and Peru, we find Indians, who know how to paint and carve ; they succeed in servilely copying whatever they behold, and they have learnt, since the arrival of the Europeans, to give correctness to their outlines ; but nothing indicates their being penetrated with that feeling of the beautiful, without which painting and sculpture cannot rise above the rank of mechanical arts. In this, and in many other respects, the inhabitants of the New World resemble the whole of the tribes of the East of Asia.

We may conceive also how the frequent use of mixed hieroglyphical paintings must contribute to spoil the taste of a nation, thus familiarized to the aspect of the most hideous figures, and of forms the most remote from correctness of proportion. To indicate a king, who, in such a year, conquered a neighbouring nation, the Egyptian, in the perfection of his writing, ranged in the same line a small number of isolated hieroglyphics, which expressed the whole series of the ideas he wished to represent ; and these characters consisted for the most part of the figures of inanimate objects : the Mexican, on the contrary, to express the same thing, was obliged to paint a group of two persons, a king, armed, overthrowing a warrior wearing the arms of the conquered city. But in order to abridge the labour of these historical paintings, they began soon to paint only what was absolutely

indispensable to recognize the objects. Why give arms to a figure represented in an attitude in which no use is made of them? Moreover, the principal forms, those by which a divinity, a temple, a sacrifice, were represented, must have been early fixed. It would have become extremely difficult to comprehend these paintings, if every artist could have capriciously varied the representation of objects, which it was so often necessary to portray. Hence it follows, that the civilization of the Mexicans might have been considerably advanced, without their being tempted to abandon the incorrect forms, to which they had been habituated for ages. A warlike nation, living on mountains, robust, but extremely ill-favoured according to the European principles of beauty, degraded by despotism, accustomed to the ceremonies of a sanguinary worship, is but little disposed to raise itself to the cultivation of the fine arts; the habit of painting instead of writing, the daily view of so many hideous and disproportioned figures, the obligation of preserving the same forms without change, these various circumstances must have contributed to perpetuate a bad taste among the Mexicans.

We seek in vain on the elevated plain of central Asia, or farther to the north and the east, for nations who have made use of this hieroglyphical painting, which has been practised in the

country of Anahuac ever since the end of the seventh century. The Kamtschatdales, the Tongoeses, and other tribes of Siberia, described by Strahlenberg, paint figures which represent historical facts. Under every zone, as we have already observed, we find nations more or less addicted to this kind of painting ; but there is a wide distance between a plate covered with certain characters, and those Mexican manuscripts, which are all composed according to a uniform system, and which may be considered as the annals of the empire. We are ignorant whether this system of hieroglyphic painting was invented in the New Continent, or whether it was owing to the emigration of some Tartar tribe acquainted with the exact duration of the year, and whose civilization was as ancient as that of the Oighours of the elevated plain of Turfan. If we do not find in the Old Continent any nation, that has made so extensive a use of painting as the Mexicans, it is because we discover neither in Europe nor in Asia a civilization so much advanced, without the knowledge of an alphabet, or certain characters that serve as a substitute, such as the characters of the Chinese and the Coreans. Before the introduction of hieroglyphical painting, the nations of Anahuac made use of those knots, and threads of various colours, which the Peruvians call *quippus*, and which are found not only among the Canadians,

but in very remote times among the Chinese. Boturini was fortunate enough to procure specimens of real Mexican quippus, or *nepohualtzitzin*, found in the country of the Tlascaltecks. In the great migrations of the nations, those of America transported themselves from north to south, as the Iberians, the Celts, and the Pelasgi flowed from east to west. Perhaps the ancient inhabitants of Peru had already passed over the elevated plain of Mexico : in fact, Ulloa, who was well acquainted with the style of Peruvian architecture, was struck with the great resemblance certain old edifices of Western Louisiana bore, in the distribution of the doors and niches, to the *tamboes* built by the Incas ; and it is not less singular, according to the traditions collected at Lican the ancient capital of the kingdom of Quito, that the quippus were known to the Puruays long before they were subdued by the descendants of Manco-Capac.

The use of writing and of hieroglyphics superseded in Mexico, as well as in China, that of knots, or the *nepohualtzitzin*. This change was effected about the year 648 of our era. A northern, but very polished race, the Toltecks, appears in the mountains of Anahuac, on the east of the gulf of California ; declares itself expelled from a country lying to the north-west of the Rio Gila, and called Huehuetlapallan ; it brings with it paintings, indicating year by year the



events of its migration ; and it professes to have quitted this country, the situation of which is altogether unknown to us, in the year 544, at the same period when the total ruin of the dynasty of the Tsin had occasioned great commotions among the nations in the east of Asia. This circumstance is very remarkable: moreover, the names, which the Toltecks bestowed on the cities they built, were those of the cities of the northern country, which they had been compelled to abandon ; from this circumstance the origin\* of the Toltecks, the Cirimecks, the Acolhuans, and the Aztecks, of those four nations who spoke the same language, and who entered successively, and by the same road into Mexico, will be known, if we ever discover in the north of America or Asia a people acquainted with the names of Huehuetlapallan, Aztlan, Teocolhuacan, Amaquemecan, Tehuajo, and Copalla.

As far as the parallel of fifty-three leagues, the temperature of the north-west coast of America is milder than that of the eastern coasts ; we might be led to think, therefore, that civilization had anciently made some progress in this climate, and even in higher latitudes. Even in our own times we perceive, that in the fifty-seventh degree, in Cox's Channel, and Norfolk Sound,

\* Clavigero, *Storia di Messico*, tom. 1, p. 126 ; tom. 4, p. 29 and 46.



called by Marchand the gulf of Tchinkitane, the natives have a decided taste for hieroglyphical paintings on wood. I have examined in another part of my works\*, whether it is probable, that these industrious nations, of a generally mild and affable disposition, are Mexican emigrants, who sought refuge toward the north, after the arrival of the Spaniards; or whether they are not rather the descendants of the Tolteck and Azteck tribes, who, at the time of the irruption of the nations of Aztlan, remained in these northern regions. From the happy coincidence of various circumstances, man raises himself to a certain degree of cultivation, even in climates the least favourable to the development of organized beings: near the polar circle, in Iceland, in the twelfth century, we know the Scandinavians cultivated literature and the arts with more success, than the inhabitants of Denmark and Prussia.

A few Tolteck tribes appear to have mixed with the nations, who formerly inhabited the country lying between the eastern bank of the Mississippi and the Atlantic ocean. The Iroquois and the Hurons made hieroglyphical paintings on wood, which bear a striking resemblance

\* See my *Essai Politique*, vol. 1, p. 372; vol. 2, p. 507: Marchand, tom. 1, p. 259, 261, 299, 375.

with those of the Mexicans\* ; they indicated the names of the persons they meant to represent, by employing the same means, which we have already mentioned in the description of a genealogical painting. The natives of Virginia had paintings called *sagkokok*, which represented in symbolical characters the events, that had taken place during the space of sixty years : these were great wheels divided by sixty spokes, or into as many equal parts. Lederer † relates having seen, in the Indian village of Pommacomek, one of these hieroglyphical cycles, in which the epocha of the arrival of the Whites on the coasts of Virginia was marked by the figure of a swan vomiting fire ; to indicate at the same time the colour of the Europeans, their passage by water, and the destruction which their fire-arms had poured on the Red men.

At Mexico the use of painting and of paper of maguey was extended far beyond the limits of the empire of Montezuma, to the borders of the lake of Nicaragua, whither the Toltecks in their migrations had carried their language and their arts. In the kingdom of Guatimala, the inhabitants of Teochiapan had preserved traditions,

\* Lafitau, vol. 2, p. 43, 225, 416. La Hontan, Voyage dans l'Amerique septentrionale, vol. 2, p. 193.

† Journal des Savans, 1681, p. 75.

that went back to the epocha of a great deluge ; after which their ancestors, led by a chief called *Votan*, had come from a country lying toward the north. In the village of Teopixca, there still existed in the sixteenth century descendants of the family of Votan, or Vodan ; for these two names are the same, the Toltecks and the Aztecks not having the four consonants *d, b, r, s*, in their language. They who have studied the history of the Scandinavian nations in the heroic times, must be struck at finding in Mexico a name, which recalls that of Wodan or Odin, who reigned among the Scythians, and whose race, according to the very remarkable assertion of Bede\*, “ gave kings to a great number of nations.”

If it be true, as many learned men have supposed, that these same Toltecks, whom pestilence, followed by a great drought, had driven from the elevated plain of Anahuac about the middle of the eleventh century of our era, reappeared in South America as founders of the empire of the Incas, why should not the Peruvians have abandoned their *quippus*, and adopted the hieroglyphical writing of the Toltecks? Almost at the same epocha, in the beginning of the twelfth century, a Greenland bishop had

\* Bede, Hist. Eccles. lib. 1, c. 15. Francisco Nunnez de la Vega, Constitutiones Synodales, p. 74.

carried, not to the Continent of America, but to Newfoundland (*Vinland*), Latin books, the same perhaps as the brothers Zeni found there in 1380\*.

We are ignorant whether tribes of the Tolteck race penetrated into the southern hemisphere, not by the Cordilleras of Quito and Peru, but by following the plains which stretch to the east of the Andes, towards the banks of the Marañon. An extremely curious fact, with which I became acquainted during my abode at Lima, leads to this supposition.

Narcissus Gilbar, a franciscan, distinguished for his courage, and his love of inquiry, found, among some independent Indians, the Panoes, on the banks of the Ucayale, a little to the north of the mouth of the Sarayacu, bundles of paintings, which in their external appearance perfectly resembled our volumes in quarto. Each leaf was three decimetres long, and two broad; the covering of these collections was formed of several leaves of the palm tree, with a very thick parenchyma, glued together: pieces of tolerably fine cotton formed the leaves, which were fastened by threads of the agave. When Gilbar reached the dwellings of the Panoes, he found an old man seated at the foot of a palm-tree,

\* Viaggio de Fratelli Zeni (Venezia, 1808), p. 67.

† Ibid.



and surrounded by several young persons, to whom he was explaining the contents of these books. The savages would not at first permit a white man to approach the teacher; and informed the missionary by means of Indians of Manoa, who alone understood the language of the Panoes, "that these paintings contained hidden things, which no stranger ought to know." With great difficulty N. Gilbar procured one of these collections, which he sent to Lima for the inspection of P. Cisneros, the learned compiler of a periodical journal\*, which has been translated in Europe. Several persons of my acquaintance have seen this book of the Panoes, every page of which was covered with paintings. These were figures of men and of animals, and a great number of isolated characters, which were deemed hieroglyphical, arranged in lines, with admirable order and symmetry. The liveliness of the colors was particularly striking; but as no one at Lima had seen a fragment of Azteck manuscripts, it was impossible to judge of the identity of the style of paintings found at the distance of eight hundred leagues from each other.

P. Cisneros wished to deposit this book in the convent of the missions of Ocopa; but whether the person, to whom it was entrusted, lost it in the passage over the Cordilleras, or whether it

\* El Mercurio Peruano.



was taken and sent clandestinely into Europe, it is certain, that it never reached the place of its first destination : every search made to regain so curious an object was fruitless, and the regret of not having copied these characters came too late. The missionary, Narcissus Gilbar, with whom I was intimately acquainted at Lima, promised me to make use of every endeavour to procure me another collection of these paintings of the Panoes : he knows that several exist among them ; and that they say themselves, that these books were transmitted to them by *their fathers*. The explanation they give of these paintings seems founded on an ancient tradition, which is perpetuated in some families. The Indians of Manoa, whom P. Gilbar commissioned to make researches on the meaning of these characters, imagined, that they related to travels, and ancient wars with the neighbouring tribes.

The Panoes differ at present but very little from the other savages, who inhabit these damp and sultry forests : naked, living on the fruits of the plaintain, and the produce of their fishery, they are far removed from all knowledge of paintings, and from feeling the want of communicating their ideas by graphic signs. Like the greater part of the tribes planted on the banks of the spacious rivers of South America, they appear to have been but recent occupants of the soil

they now inhabit. Are they the scanty remnant of some civilized nation fallen into the savage state? or are they descendants of those same Toltecks, who carried the use of hieroglyphic paintings into New-Spain, and who, expelled by other nations, have disappeared from the borders of the lake Nicaragua? These are interesting questions for elucidating the history of man; and are connected with others, the importance of which has not hitherto been sufficiently felt.

Some granitic rocks, which rise on the savannahs of Guiana, between the Cassiquiare and the Conorichite, are covered with figures of tigers, crocodiles, and other characters, which may be regarded as symbolical. Similar figures are found four hundred leagues to the north and the west, on the banks of the Orinoco, near Encaramada and Caicara; on the borders of the river Cauca, near Timba, between Cali and Jelima; and even on the elevated plain of the Cordilleras, in the Paramo of Guanacas. The natives of these regions are unacquainted with the use of metallic tools; and all concur in asserting, that these characters already existed when their ancestors arrived in those countries. Is it to a single nation, trained to industry, and skilled in sculpture, such as the Toltecks, the Aztecks, and the tribes that emigrated from Aztlan, that these marks of remote civilization are owing? In what region

must we place the seat of this culture? Is it to the north of the river Gila, on the elevated plain of Mexico? or in the southern hemisphere, in those lofty plains of Tiahuanacu, which the Incas themselves found covered with ruins of majestic greatness, and which may be considered as the Himala and the Thibet of South America? These problems are not to be solved in the present state of our knowledge.

We have now examined the relations, that exist between the Mexican paintings and the hieroglyphics of the ancient world. We have endeavoured to throw some light on the origin and migrations of the nations that introduced into New-Spain the use of symbolic writing, and the fabrication of paper; what remains is to notice the manuscripts (*Codices Mexicani*), that, since the sixteenth century, have been sent to Europe, and preserved in public and private libraries. We shall be astonished to find how rare are become these precious monuments of a nation, which in its progress toward civilization appears to have struggled with the same obstacles, that opposed the advancement of the arts among all the nations of the North, and even of the East of Asia.

From the researches I have made it appears, that there exist at present in Europe only six collections of Mexican paintings, those of the Escorial, Bologna, Velettri, Rome, Vienna, and

Berlin. The learned jesuit Fabrega, who is often cited in the works of Mr. Zoega, and whose manuscripts relating to the Azteck antiquities were communicated to me by the Chevalier Borgia, nephew to the Cardinal of that name, supposes, that the archives of Simancas in Spain contain also some of these hieroglyphical paintings, which Robertson has so aptly denominated *picture writings*\*.

The collection preserved at the Escorial has been examined by Mr. Waddilove, chaplain to the English embassy at Madrid when Lord Grantham was ambassador. It has the form of a book in folio; which may lead us to suspect, that it is only a copy of a Mexican manuscript, for the originals I have examined are all of the size of volumes in quarto. The objects represented seem to prove, that the collection of the Escorial, like those of Italy and Vienna, are either astrological books, or real rituals, which point out the religious ceremonies prescribed for particular days of the month. At the bottom of each page is an explanation in Spanish, which has been added since the conquest.

The collection of Bologna is deposited in the library of the Institute of Sciences of that city. We are unacquainted with its origin; but we read on the first page, that this painting, which

\* Robertson's History of America, 1802, vol. 3, p. 403.



is 326 centimetres (eleven Roman palms) in length, was ceded, the 26th of December, 1665, by Count Valerio Zani to the Marquis of Caspi. The characters, which are traced on a thick and ill prepared skin, seem in a great measure to allude to the form of the constellations, and to astrological notions. There exists an engraved copy of this *Codex Mexicanus* of Bologna, in the Museum of Cardinal Borgia, at Veletri.

The collection of Vienna, which is sixty-five pages, is become celebrated, since it fixed the attention of Dr. Robertson ; who, in his classic work on the History of the New Continent, has published a few pages in outlines only, and without coloring. We read on the first page of this Mexican manuscript, that it was sent by King Emanuel of Portugal to Pope Clement the Seventh, and that it has since been in the hands of the Cardinals Hippolito de Medicis and Capuanus.

Lambeccius\*, who has made very incorrect engravings of some figures of the *Codex Vindobonensis*, observes, that as King Emanuel was dead two years before the election of Pope Clement the Seventh, this manuscript could not have been given to this last Pontiff, but rather to Leo the Tenth, to whom the King of Portugal sent an

\* Lambeccii Commentar. de Bibliotheca Cæsar. Vindobonensi, ed. 1776, p. 966.



embassy in 1513; but I ask how it was possible to have Mexican paintings in Europe in 1513, since Hernandez de Cordova did not discover the coasts of Yucatan till 1517, and Cortez landed at Vera Cruz only in 1519? Is it probable, that the Spaniards should have found Mexican paintings in the island of Cuba, when the inhabitants of that island, notwithstanding the short distance from False Cape to Cape St. Antonio, do not appear to have had any communication with the Mexicans? It is true, that, in the note added to the collection of Vienna, this collection is not called *Codex Mexicanus*, but *Codex Indiæ meridionalis*: nevertheless the perfect analogy between this manuscript and those at Veletri and Rome leaves no doubt with respect to their common origin. King Emanuel died in 1521; Clement the Seventh in 1534: it seems to me incredible, that before the first entry of the Spaniards into Tenochtitlan on the 8th of November, 1519, there should have been a Mexican manuscript at Rome. At whatever period it reached Italy, it is certain, that, after having passed from hand to hand, it was offered in 1677 to the Emperor Leopold by the Duke of Saxe-Eisenach.

We are altogether ignorant of the fate of the collection of Mexican paintings, which existed toward the end of the 17th century at

London, and which were published by Purchas. This manuscript was sent to the Emperor Charles the Fifth by the first Viceroy of Mexico, Antonio de Mendoza, Marquis of Mondejar: the vessel which transported this valuable object was taken by a French ship, and the collection fell into the hands of Andrew Thevet, geographer to the King of France, who had himself visited the new continent. After the death of this traveller, Hakluyt, who was chaplain to the English embassy at Paris, purchased the manuscript for twenty crowns; and from Paris it went to London, where Sir Walter Raleigh was desirous of publishing it. The expense of engraving the figures retarded the publication till 1625; when, in compliance with the wishes of the learned antiquary Spelman, Purchas inserted the whole of the *collection of Mendoza* in his collection of travels\*. These same figures have been copied by Thevenot †, in his *Relation of divers Travels*: but this copy, as Abbé Clavigero ‡ has very justly observed, is full of faults; the events, for instance, which took place under the reign of the King Ahuizotl, are there indicated under the reign of Montezuma.

\* Purchas's Pilgrims, vol. 3, p. 1065.

† Thevenot (1696), vol. 2, Pl. 4, p. 1—85.

‡ Clavigero, vol. 1, p. 23.

Some authors\* have asserted, that the original of the celebrated collection of Mendoza was preserved in the royal library at Paris; but it seems certain, that for a century past this library has contained no Mexican manuscript. How should the collection purchased by Hakluyt, and carried to England, have been brought back to France? We know at present of no other Mexican paintings at Paris than some copies contained in a Spanish manuscript, which came from the library of Tellier, and of which we shall have occasion to speak hereafter. This book, highly interesting in other respects, is preserved in the superb collection of manuscripts in the public library at Paris. It resembles the *Codex anonymus* of the Vatican, N. 3738, which is the work of the monk Pedro de los Rios†. Kircher has copied a part of the engraving of Purchas‡.

The collection of Mendoza throws light over the history, political state, and domestic life of the Mexicans. It is divided into three sections; which, like the skandhas of the Hindoo Puranas, treat of subjects altogether different. The first section gives the history of the Azteck dynasty

\* Warburton, Essay on Hieroglyphicks, vol. 1, p. 18.  
Papillon, Histoire de la Gravure en Bois, tom. 1, p. 364.

† See above the description of Pl. 7.

‡ Kircheri Œdipus, vol. 3, p. 32.

from the foundation of Tenochtitlan, in the year 1325 of our era, to the death of Montezuma the Second, properly called Monteuhezoma Xocojotzin, in 1520; the second section is a list of the tributes, which each province and little town paid the Azteck sovereigns; the third and last section contains sketches of the domestic life and manners of the Azteck people. The viceroy Mendoza has added to each page of the collection an explanation in Mexican and Spanish, so that the whole forms a work very interesting to the historian. The figures, notwithstanding the incorrectness of the outlines, present several very singular sketches of manners. We see in them the education of children from their infancy, till they become members of society, either as husbandmen, manufacturers, warriors, or priests. The quantity of food suitable to every age, the punishment that ought to be inflicted on children of both sexes; every thing among the Mexicans was prescribed in the most minute detail, not by law, but by ancient customs, from which no deviation was permitted. Fettered by the yoke of arbitrary power, and the barbarism of civil institutions, without freedom of will in the most indifferent actions of domestic life, the whole nation was reared in a languid uniformity of customs and of superstitions. The same causes have produced similar effects in ancient Egypt, in India,



in China, in Mexico, and in Peru; wherever men were merely masses animated by a sameness of will; wherever laws, religion, and custom, have placed barriers to the progress of intellectual improvement and individual happiness.

In the paintings of the Mendoza collection we trace the ceremonies practised on the birth of a child. The midwife, invoking the god Ometeuctli, and the goddess Omecihualt, who reside in the abodes of the blest, sprinkled water on the forehead and the breast of the newborn infant; and after pronouncing different prayers\*, in which water was considered as the symbol of the purification of the soul, the midwife bad the children draw near, who had been invited to give the child a name. In some provinces a fire was lighted at the same time, and the infant was seemingly made to pass through the flame, and undergo the double purification of fire and water. This ceremony reminds us of usages, the origin of which, in Asia, appears to be lost in the darkness of the remotest ages.

Other plates of the collection of Mendoza represent the punishments, often barbarous, inflicted by parents on their children, according to the greatness of the fault, and the age and

\* Clavigero, vol. 2, p. 86.



sex of the offender. A mother exposes her daughter to the smoke of pimento (*capsicum baccatum*): a father pricks his son eight years old with agave leaves, which are terminated by thorns. The painting indicates in what cases the hand only of the child should be pricked, and in what other cases parents are permitted to extend this painful operation over the whole of the body. A priest, *teopixqui*, chastises a novice, by throwing burning coals on his head, because he has passed the night beyond the boundary of the temple. Another priest is represented as sitting in the attitude of observing the stars, to indicate the hour of midnight. We here perceive, in the Mexican painting, the hieroglyphics of midnight placed above the head of the priest, and a dotted line from the eye of the observer pointing towards a star\*. We see also figures, which represent women spinning with a distaff, and weaving at a loom the warp of which is perpendicular: a goldsmith blowing a charcoal fire through a pipe; an old man of seventy, to whom the law allows the privilege of intoxication, as it did to a woman when she became a grandmother: a match-maker, called *cihuatlanque*, who carries the young virgin on her back to the house of the bridegroom; and lastly the nuptial benedic-

\* Thevenot, vol. 2, Pl. 4, fig. 49, 51, 55, 61.

tion, the ceremony of which consisted in the priest, or teopixqui, tying the skirt of the young man's cloak (*tilmatli*), to the young woman's robe (*huepilli*). The Mendoza collection contains also several figures of Mexican temples, in which we clearly distinguish the pyramidal monument divided into steps, and the little chapel, the *veos*, at the top. But the most complicated painting, as well as the most ingenious of this *Codex Mexicanus*, is that which represents a *tlatoani*, or governor of a province, strangled for revolting against his sovereign ; for the same picture records the crime of the governor, the punishment of his whole family, and the vengeance exercised by his vassals against the state messengers, bearers of the order of the king of Tenochtitlan.

Notwithstanding the enormous quantity of paintings, which, considered as monuments of Mexican idolatry, were burnt at the beginning of the conquest, by order of the bishops and the first missionaries, Boturini\*, whose misfortunes we have already deplored in the preceding pages, succeeded toward the midst of the last century in collecting near 500 of their hieroglyphical paintings. This collection, the finest and the most complete of those hitherto made, was dispersed like that of Siguenza ; of which

\* Boturini, Tableau General, p. 1—96.

some slight remnants were preserved, till the expulsion of the Jesuits, in the library of St. Peter and St. Paul at Mexico. A part of the paintings collected by Boturini was sent to Europe in a Spanish vessel, which was taken by an English privateer. It was never known whether these paintings reached England, or whether they were thrown into the sea as of no value. A well informed traveller has assured me, that a Codex Mexicanus is shown in a library at Oxford, which in the liveliness of its colours resembles that of Vienna; but Robertson, in the last edition of his history of America, says expressly, that no other monument of Mexican industry and civilization exists in England, beside a golden cup of Montezuma's, belonging to Lord Archer. How could this Oxford collection have remained unknown to the illustrious Scottish historian?

The greater part of the manuscripts of Boturini, those which were confiscated in New Spain, were torn, pillaged, and dispersed by persons, who were ignorant of the value of these objects. What exists at present, in the palace of the viceroy, composes only three packets, each seven decimetres square by five in height. They remained in one of the damp apartments of the ground floor with the archives of the government, which the viceroy, Count Revillagigedo removed, because the humidity mould-

ered the paper with alarming rapidity. We feel a sentiment of indignation on seeing the extreme negligence, with which these valuable remains were abandoned, which had cost so much care and labor, and which the unfortunate Boturini, fired with that enthusiasm, which is peculiar to enterprising men, calls in his Historical Essay, "the only property which he possessed in the Indies, and which he would not change against all the gold and silver of the New World." I shall not here undertake to give a detail of the paintings preserved in the palace of the viceroyalty; but shall only observe, that there are some, which are six metres long and two broad, and which represent the migrations of the Aztecks from the Rio Gila to the valley of Tenochtitlan, the foundation of several cities, and wars with the neighbouring nations.

The library of the University of Mexico is no longer in possession of any original hieroglyphic paintings. I found only a few copies in outline without colours, and executed with little care. The richest and finest collection of this capital is that of P. Jose Antonio Pichardo, member of the congregation of San Felipe Neri. The house of this enlightened and studious person was to me what the house of Siguenza was to the traveller Gemelli. Pichardo has sacrificed his little fortune in collect-



ing Azteck paintings, and in copying those he was unable to purchase : his friend Gama, author of several astronomical memoirs, bequeathed him all the most valuable hieroglyphical manuscripts he possessed. In the new continent, as well as in every other country, private individuals, and those not the most opulent, become the collectors and preservers of objects, which are worthy the protection of governments.

In the kingdom of Guatemala, or in the interior of Mexico, I know of no persons animated with the same zeal as Alzate, Velasquez, and Gama. The hieroglyphic paintings are now so scarce in New Spain, that the greater part of the well informed men who reside there have never seen any ; and among the remains of the collection of Boturini there is not a single manuscript so fine as the *Codices Mexicani* of Veletri and Rome. I have however no doubt, that several objects of importance to the study of history may be still found in the hands of the Indians, who inhabit the province of Mechuacan, the Intendancies of Mexico, Puebla, and Oaxaca, the peninsula of Yucatan, and the kingdom of Guatemala. In these countries the nations, who were emigrants from Aztlan, had reached a certain degree of civilization ; and a traveller, who, understanding the Azteck, Tarasck and Maya languages, could obtain the confidence of the natives, might still collect, three cen-



turies after the conquest, and a hundred years after the journey of Boturini, a considerable number of historical Mexican paintings.

The Codex Mexicanus of the Borgian museum at Veletri is the finest of the Azteck manuscripts, that I have examined. We shall have occasion to speak of it hereafter, in the explanation of the 15th plate.

The collection preserved in the royal library at Berlin contains different Azteck paintings, which I purchased during my abode in New Spain. The twelfth plate gives two fragments of this collection: it contains the lists of tributes, genealogies, the history of the migrations of the Mexicans, and a calendar made at the beginning of the conquest, in which the simple hieroglyphics of the days are joined to figures of saints painted in the Azteck style.

The library of the Vatican at Rome possesses in the valuable collection of its manuscripts two Codices Mexicani, numbered 3738, and 3776, in the catalogue. These collections, as well as the manuscript of Veletri, were unknown to Dr. Robertson, when he enumerated the Mexican paintings preserved in the different libraries of Europe. Mercatus\* in his description of the obelisks of Rome, relates, that, toward the end of the 16th century, two col-

\* Mercatus, degli Obelischi di Roma, C. 2, p. 96.

lections of original paintings existed in the Vatican. It would seem, that one of these collections is entirely lost, unless it is that which is seen in the library of the Institute of Bologna; the other was found in 1785 by the jesuit Fabrega, after fifteen years search.

The Codex Vaticanus, No. 3776, of which Acosta and Kircher have made mention\*, is 7·87<sup>m</sup>, or thirty-one palms and a half, long, and 0·19<sup>m</sup>, or seven inches, square: its forty-eight foldings form ninety-six pages, or as many divisions marked on both sides of several doe skins glued together. Every page is subdivided into two compartments; but the whole manuscript contains only 176 of these compartments, because the first eight pages consist of the simple hieroglyphics of the days, arranged in parallel rows close to each other. The thirteenth plate of the Picturesque Atlas is an exact copy of one of these folds, or a page of the Codex Vaticanus. As all the pages are alike with respect to the general arrangement, this copy is sufficient to give an idea of the whole book.

The border of each fold is divided into twenty-six small compartments, which contain the simple hieroglyphics of the days. These hieroglyphics are twenty in number, which form periodical series. As the small cycles are of

\* Zoega, De Orig. Obeliscor. p. 531.

thirteen days each, it follows, that the series of the hieroglyphics passes from one cycle to another. The whole of the Codex Vaticanus contains a hundred and seventy-six of these small cycles, or two thousand two hundred and ninety days. We shall not enter here into any detail on these subdivisions of time, proposing to give an explanation of the Mexican calendar, one of the most complicated, but also one of the most ingenious to be found in the history of astronomy. Every page exhibits, in the two subdivisions of which we have already spoken, two groups of mythological figures. We should lose ourselves in vain conjectures, were we to attempt interpreting these allegories; the manuscripts of Rome, Veletri, Bologna, and Vienna having none of those explanatory notes, which the viceroy Mendoza added to the manuscript published by Purchas. It were to be wished, that some government would publish at its own expense these remains of the ancient American civilization; for it is only by the comparison of several monuments, that we can succeed in discovering the meaning of these allegories, which are partly astronomical, and partly mystic. If of all the Greek and Roman antiquities there only remained a few cameos, or solitary coins, the most simple allusions would have escaped the sagacity of antiquaries. How much light has the inspec-

tion of bass-reliefs thrown over the study of medals !

Zoega, Fabrega, and others, who have studied the Mexican manuscripts in Italy, consider the *Codex Vaticanus*, like that of Velettri, as consisting of *tonalamatls*, or *ritual almanacks* ; that is to say, as books which showed the people, for a space of several years, the divinities that presided over the small cycles of thirteen days, and who governed, during this space, the destinies of men ; the religious duties, which ought to be practised ; and especially the offerings, which were to be made to the idols.

The thirteenth plate of my Atlas, which is a copy of the ninety-sixth page of the *Codex Vaticanus*, represents on the left an adoration : the deity has on a helmet, the ornaments of which are very remarkable : he is seated on a small bench, called *icpalli*, before a temple, of which only the top, or small chapel placed on the upper part of the pyramid, is represented. The adoration consisted at Mexico, as well as in the East, in the ceremony of touching the ground with the right hand, and carrying the left to the mouth. In the drawing, No. 1, the homage is rendered by a genuflexion ; the attitude of the figure, which prostrates itself before the temple, is found in several paintings of the Hindoos.



The group, No. 2, represents the celebrated *serpent woman* Cihuacohuatl, called also Quilaztli, or Tonacacihua, *woman of our flesh*: she is the companion of Tonacateuctli. The Mexicans considered her as the mother of the human race; and, after the god of the *celestial Paradise*, Ometeuctli, she held the first rank among the divinities of Anahuac; we see her always represented with a great serpent. Other paintings exhibit to us a feather-headed snake, cut in pieces by the great spirit, Tezcatlipoca, or by the Sun personified, the god Tonatiuh. These allegories remind us of the ancient traditions of Asia. In the *woman and serpent* of the Aztecks we think we perceive the Eve of the Semetic nations: in the snake cut in pieces, the famous serpent *Kaliya*, or *Kalinaga*, conquered by Vishnu, when he took the form of Krishna. The Tonatiuh of the Mexicans appears also to be identical with the Krishna of the Hindoos, recorded in the Bhagavata Purana, and with the Mithras of the Persians. The most ancient traditions of nations go back to a state of things, when the earth, covered with bogs, was inhabited by snakes and other animals of gigantic bulk: the beneficent luminary, by drying up the soil, delivered the earth from these aquatic monsters.

Behind the serpent, who appears to be speaking to the goddess Cihuacohuatl, are two naked figures; they are of a different colour, and seem



to be in the attitude of contending with each other. We might be led to suppose, that the two vases, which we see at the bottom of the picture, one of which is overturned, is the cause of this contention. The serpent woman was considered at Mexico as the mother of two twin children ; these naked figures are perhaps the children of Cihuacohualt ; they remind us of the Cain and Abel of Hebrew tradition. I doubt whether the difference of colour, which we observe in the two figures, indicates a difference of race, as in the Egyptian paintings found in the tombs of the kings at Thebes, and in the ornaments moulded in earth and stuck on the chests which contain the mummies at Sakhara. In carefully studying the historical hieroglyphics of the Mexicans, we seem to recognize, that the heads and hands of the figures are painted as by chance, sometimes yellow, sometimes blue, and at other times red.

The cosmogony of the Mexicans ; their traditions of the mother of mankind, fallen from her first state of happiness and innocence ; the idea of a great inundation, in which a single family escaped on a raft ; the history of a pyramidal edifice raised by the pride of men, and destroyed by the anger of the gods ; the ceremonies of ablu-  
tion practised at the birth of children ; those idols made with the flower of kneaded maize, and distributed in morsels to the people assem-

bled in the temples ; the confession of sins made by the penitent ; those religious associations, similar to our convents of men and women ; the universal belief, that white men, with long beards and sanctity of manners, had changed the religion and political system of nations ; all these circumstances had led the priests, who accompanied the Spanish army at the time of the conquest, to the belief, that at some very distant epocha christianity had been preached in the New Continent. Some learned Mexicans\* have imagined, that the Apostle St. Thomas was the mysterious personage, high priest of Tula, whom the Cholulans acknowledged under the name of *Quetzalcoatl*. It is no way doubtful, that Nestorianism, mingled with the dogmata of the Bouddhistes and the Shamans†, spread through Mantchou Tartary into the north-east of Asia. we may therefore suppose, with some appearance of reason, that christian ideas have been communicated by the same means to the Mexican nations, especially to the inhabitants of that northern region, from which the Toltecks emigrated, and which we must consider as the *officina virorum* of the New World.

This supposition would be even more admissi-

\* Siguenza, Opera ined. Eguiara, Bibl. Mexicana, p. 78.

† LANGLES, Rituel des Tartares Manchoux, p. 9 et 14.  
 GEORGI *Alphab. tibetanum*, p. 298.

ble than the hypothesis, according to which the ancient traditions of the Hebrews and Christians passed into America with Scandinavian colonies, formed since the eleventh century on the coasts of Greenland, at Labrador, and perhaps even in the island of Newfoundland. These European colonists undoubtedly visited a part of the continent, which they called Drogeo; they were acquainted with the countries situate to the south-west, and inhabited by cannibals collected in populous cities; but, without examining in this place whether these cities were those of the provinces of Ichiaca and of Confachiqui, visited by Hernando de Soto, the conqueror of Florida, it may suffice to observe, that the religious ceremonies, the dogmas, and traditions, which struck the imagination of the first Spanish missionaries, were incontestably found at Mexico ever since the arrival of the Toltecks, and consequently three or four centuries before the navigation of the Scandinavians to the eastern coasts of the New Continent.

The ecclesiastics, who, following the armies of Cortez and Pizarro, penetrated into Mexico and Peru, were naturally inclined to exaggerate the analogies, which they fancied they had recognized between the cosmogony of the Aztecks, and the dogmas of the christian religion. Imbued with the Hebrew traditions, comprehending imperfectly the languages of the country,

and the meaning of the hieroglyphical paintings, they referred every thing to the system they had previously formed ; like the Romans, who saw nothing among the Germans and Gauls but their own worship, and their own divinities. When we examine this question by the rules of the most rigid analysis, we find nothing among the Americans, which leads to the supposition, that the Asiatic nations migrated to the New Continent after the establishment of Christianity. I am very far from denying the possibility of these posterior communications ; I am not ignorant\*, that the Tchoutskis annually crossed Behring's Straits to make war on the inhabitants of the north-west coast of America ; but I think I may affirm, from the knowledge we have acquired since the end of the last century of the sacred books of the Hindoos, that, in order to explain these resemblances of traditions, of which all the first missionaries speak, we have no need to recur to Western Asia, peopled by nations of the Semetic race ; these same traditions, of high and venerable antiquity, are found both among the followers of Brahma, and among the Shamans of the eastern steppes of Tartary.

We will resume this important subject, either

\* See my *Essai Politique sur la Nouvelle-Espagne*, vol. 2, p. 502, 8vo edition.

in treating of the Pastous\*, an American nation, who eat nothing but vegetables, and who hold in abhorrence those who feed on flesh; or in speaking of the dogma of the metempsychosis received among the Tlascaltecks. We shall examine the Mexican tradition of the four suns, or four destructions of the world; as well as the traces of the *trimurti*, or trinity of the Hindoos, found in the religion of the Peruvians. Notwithstanding these striking analogies existing between the nations of the New Continent, and the Tartar tribes who have adopted the religion of Bouddah, I think I discover in the mythology of the Americans, in the style of their paintings, in their languages, and especially in their external conformation, the descendants of a race of men, which, early separated from the rest of mankind, has followed for a lengthened series of ages a peculiar road in the unfolding of its intellectual faculties, and in its tendency towards civilization.

\* Garcilasso, Comentarios reales, tom. 1, p. 274.



## COSTUMES

DELINEATED BY THE

MEXICAN PAINTERS IN THE TIME OF  
MONTEZUMA.

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PLATE XIV.

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THESE nine figures are taken from the *Codex Anonymus*, No. 3738, preserved among the manuscripts of the Vatican, which we have had occasion to cite several times. They are copies of pictures made by Mexican painters at the time of the first abode of Cortez at Tenochtitlan. P. Rios, in tracing the drawings, appears to have been more attentive to the particulars of the dresses, than to a faithful imitation of the outlines. On comparing the paintings of Plate fourteenth with those contained in the original manuscripts that have reached us, we see, that the figures copied by the Spanish monk are somewhat too much lengthened. These alterations of form are every where found, when the artists have not been sufficiently im-

bued with the idea of what importance it is to preserve the style, which characterizes the productions of the art among nations, who are more or less removed from civilization. What a difference in the truth of the outlines between the hieroglyphics published by Norden, and those we find in the work of Zoega on the obelisks, or in the description of the monuments of Egypt, with which the Institute of Cairo has lately enriched the sciences !

Nos. 1, 2, 3, 4, 5. Five Mexican warriors : the first three wear the dress called *ichcahuepilli*, a kind of cuirass of cotton, three centimetres thick, and covering the body from the neck to the waist. The soldiers of Cortez adopted this armour, which they named *escaupil* ; a term in which we scarcely trace a word of the Azteck language. The *ichcahuepilli* was a perfect security against darts : but we must not confound it with the coats of mail of gold or copper, worn by the generals, called *lords of the eagles and the tigers*, *quauhtin* and *oocelo*, on account of their armour in the shape of masks. The bucklers, *chimalli*, Nos. 1 and 2, are of a very different form from those figured by Purchas and Lorenzana \*. The shield No. 2, has an

\* Purchas, Pilgrims, tom. 3, p. 1080, fig. LM ; p. 1099, fig. C ; pl. 4, fig. F. Lorenzana, Historia de Nueva Espana, p. 177, lam. 2, 8, et 2. Adornos militares.

appendage of cloth and feathers, which served to deaden the stroke of the dart ; its form reminds us of the bucklers, which we find represented on several vases of Græcia Magna. The club, carried by the warrior, No. 3, was hollow, and contained stones, which were flung with prodigious force, as if they were thrown from a sling. The figure, No. 4, represents one of those intrepid soldiers, who went almost naked to war, with the body wrapped in a net of large meshes, which they threw over the head of the enemy, as the Roman *retiarii* in a contest with the *mirmillones*. No. 5 is a private soldier, who wears a cloth cloak, and a very narrow belt of skin, *maxtlatl*, around his waist.

The figure, No. 6, represents, as the *Codex Vaticanus* expressly indicates, the unfortunate Montezuma II, in a court dress, such as he wore in his palace. His robe, *tlachquauhjo*, is bordered with pearls ; his hair turned back to the top of his head, and tied with a red riband, the military distinction of princes, and the most valiant commanders : his neck is ornamented with a collar of precious stones (*cozcapetlalt*), but he wears neither the bracelets (*matemecatl*), nor the boots (*cozehuatl*), nor the ear rings (*nacochtli*), nor the ring set with emeralds suspended at the lower lip, which belonged to the grand dress of the emperor. The author of the *Codex Anonymus* says, “ that the sovereign is figured

holding flowers in one hand, and a reed with a cylinder of odoriferous resin at the end, in the other." The vase which the emperor holds in his left hand has some resemblance to that which is seen in the hand of the intoxicated Indian, represented in the collection of Mendoza\*. The Mexican painters generally represented kings and great nobles with naked feet, to indicate, that they were not born to make use of their legs, and that they constantly ought to be carried in palanquins, on the shoulders of their domestics †.

No. 7. An inhabitant of Tzapoteca, a province which comprised the south-east part of the intendency of Oaxaca.

Nos. 8 and 9. Two women of Huasteca; the dress of the latter figure is no doubt Indian; but that of No. 8 very much resembles a European dress. Is it a woman of the country, to whom the soldiers of Cortez had given a neckerchief and a rosary? This is a question I shall not decide; but I observe, that the three cornered handkerchief is seen in several Mexican paintings before the arrival of the Spaniards; and that the pretended rosary, which is not terminated by a cross, may very well be one of those strings of beads, which existed from the most remote an-

\* Purchas, p. 1117, fig. F.

† Codex Anon. n. 3738, fol. 60.

tiquity in all Eastern Asia, in Canada, Mexico, and Peru.

Though P. Rios, as we have already observed, appears to have somewhat lengthened the figures, the extremities, the form of the eyes, and that of the lips, the uppermost of which is constantly protruded beyond the lower, are proofs that he has copied faithfully.



# AZTECK HIEROGLYPHICS,

FROM THE

MANUSCRIPT OF VELETRI.

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PLATE XV.

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OF all the Mexican manuscripts preserved in Italy, the *Codex Borgianus* of Veletri is the largest, and the most remarkable for the splendor and extreme variety of the colours. It is forty-four or forty-five palms (near eleven metres) long; and has thirty-eight folds, or seventy-six pages. It is a ritual and astrological almanack, which, from the distribution of the simple hieroglyphics of the days, and that of the groups of mythological figures, resembles altogether the *Codex Vaticanus*, a page of which is given in the thirteenth plate.

The manuscript of Veletri appears to have belonged to the family of Giustiniani. We know not by what unlucky chance it fell into the hands of the domestics of that house, who, ignorant of the value of such a collection of

monstrous figures, gave it as a plaything to their children. From their hands it was rescued by an enlightened lover of antiquities, Cardinal Borgia; but not before attempts had been made to burn some pages or folds of the deer skin, on which the paintings are delineated. Nothing indicates the antiquity of this manuscript, which perhaps is but an Azteck copy of an older book. The great freshness of the colours might lead us to suspect, that the *Codex Borgia*, as well as that of the Vatican, does not go beyond the fourteenth century.

We cannot fix our eyes on these paintings, without feeling a crowd of interesting questions pressing on our minds. Did there exist at Mexico, in the lifetime of Cortez, hieroglyphic paintings made in the time of the Tolteck dynasty, and consequently in the seventh century of our era? Were there other copies at that period than those of the famous *divine book*, called *teoamoxtli*, compiled at Tula, in the year 660, by the astrologer Huematzin, and in which we find the history of Heaven and of Earth, a cosmogony, a description of the constellations, the division of time, the migrations of nations, mythology, and moral philosophy? Was this Mexican Purana, the *teoamoxtli*, the remembrance of which has been preserved so many ages in the Azteck traditions, one of those, which monkish fanaticism committed to the

flames in Yucatan, and the loss of which book was so deeply lamented by Acosta, who was more learned and enlightened than his contemporaries? Is it certain, that the Toltecks, that industrious and enterprising people, who have several traits of resemblance with the Tchouds\*, or ancient inhabitants of Siberia, were the first to introduce painting? or had the Cuitlaltecks and the Olmecks, who dwelt on the elevated plain of Anahuac before the irruption of the nations of Aztlan, and to whom the learned Siguenza attributes the construction of the pyramids of Teotihuacan, already recorded their annals and their mythology in collections of hieroglyphical paintings? We have not data enough to answer these important questions; the obscurity, that envelops the origin of the Mongul and Tartar nations, seems to extend over the whole history of the New Continent.

The Codex Borgianus has been commented upon by the Jesuit Fabrega, of Mexican origin. During my last abode in Italy, in 1805, the Chevalier Borgia, nephew of the Cardinal, had the kindness to send for the Mexican manuscript with its commentary from Veletri to Rome. I examined them carefully: the explanations of P. Fabrega appeared to me often arbitrary and

\* Voyage de Pallas (traduction de Paris), tom. 4, p. 282.

fanciful. I have engraved a part of the figures, which most excited my curiosity ; I have added to each group, represented in the 15th plate, the citation of the *Codex Borgianus*, and that of the Italian manuscript, which was to serve as a commentary.

No. 1. An unknown animal, decorated with a collar, and a kind of harness, but pierced with darts. Fabrega calls it the *crowned rabbit*, the *sacred rabbit*. This figure is found in several rituals of the ancient Mexicans. According to the traditions, which have been preserved to our times, it is a symbol of suffering innocence. Under this point of view, the allegorical representation reminds us of the lamb of the Hebrews, or the mystic idea of an expiatory sacrifice destined to calm the anger of the divinity. The incisive teeth, and the form of the head and tail, seem to indicate, that the painter wished to represent an animal of the order glires (*rongeurs*) : although the feet with two hoofs, and a toe which does not touch the ground, indicate a species of the ruminating tribe ; I doubt whether it be a *cavia*, or Mexican hare ; perhaps it may be some unknown quadruped, living in the interior, on the north of the Rio Gila, towards the north-west part of America.

This same animal, with a much longer tail. seems to me to figure a second time in the *Codex Borgianus* at the fifty-third page : of this No. 11,

of the 15th plate, is a copy. P. Fabrega takes this figure, which is covered with twenty hieroglyphics of the days, for a stag (*mazatl*) ; P. Rios asserts, that it is an astrological conceit of the physicians ; a painting which teaches, that he who is born on such or such a day, shall have pains in his eyes, his stomach, or his ears : we see indeed, that the twenty simple hieroglyphics of the days are distributed over different parts of the body.

The sign of the day which began the small period of thirteen days, or the half lunation, was considered as ruling for the whole of this period ; so that a man born on the day when the hieroglyphic was an eagle, had every thing to fear, or to hope, each time that an eagle swayed the week of thirteen days. Mr Zoega\* seems to adopt the explanation of Rios ; and finds a striking connexion between this fiction and the iatromathematic ideas of the Egyptians. If we cast our eyes over our own almanacks, we shall see, that these absurd ideas tarnish even our own times ; since it is often less profitable to enlighten the people, than to encourage their credulity. I found this same allegorical figure, which belongs to astrological medicine, in the *Codex Borganus*, fol. 17 (MSS. No. 66) and in the *Codex Anonymus* of the Vatican, fol. 54.

\* Zoega, p. 523 and 531.



No. 3, 5, 6, 7. A child newly born is represented four times. The hair, which rises like two horns on the top of the head, indicates that it is a girl. The child is sucking; the umbilical cord is cutting; she is presented to the divinity; and her eyes are touched as a sign of benediction. Fabrega asserts, that the seated figures, No. 5 and 7, represent two priests. He thinks he recognizes, by the helmet of No. 7, the high priest of the god Tonacateuctli.

No. 4. The representation of a human sacrifice. A priest, whose figure is almost lost under a monstrous disguise, is tearing out the heart of the victim; his left hand is armed with a club: the naked body of the victim is painted; spots are marked on it, by which the skin of the jaguar, or American tiger, were meant to be imitated; on the left is another priest (*topiltzin*), who pours the blood of the heart plucked out upon the image of the sun placed in a niche in a temple. I should not have engraved this hideous scene, if the disguise of the sacrificer did not present certain remarkable analogies with the Ganesa of the Hindoos, which do not seem accidental. The Mexicans made use of helmets, which imitated the form of the head of a serpent, a crocodile, or a jaguar. In the mask of the sacrificer, we discover the resemblance of the trunk of an elephant, or some pachydermatous animal resembling it in the configuration of the head,

but the upper jaw bone is furnished with incisive teeth. The muzzle of the tapir is no doubt somewhat longer than the snout of our swine, but there is a great distance from the muzzle of the tapir to the trunk figured in the Codex Borganianus. Had the people of Aztlan, sprung from Asiatic origin, preserved some vague notions of elephants? or, which appears to me much less probable, did their traditions go back to the period, when America was yet peopled with those gigantic animals, the petrified skeletons of which are found buried in the marly lands even on the ridge of the Mexican Cordilleras? May there not also exist, in the north-west part of the New Continent, in countries which have been visited neither by Hearne, Mackenzie, nor Lewis, some unknown animal of this kind, which, from the configuration of its trunk, holds the middle place between the elephant and the tapir? The hieroglyphics of the days, which surround the group figured in the forty-ninth page of the collection of Veletri, clearly indicate, that this sacrifice was made at the end of the year, after the *nemontemi*, or complementary days. The temple of the Sun reminds us of the worship of a mild and humane people, the Peruvians. That worship, in which no other offerings were made to the divinity than flowers, incense, and the first fruits of their harvests, existed without doubt at Mexico to the beginning of the fourteenth cen-

ture. A learned writer\*, who has made some curious comparisons between the mythological ideas of different nations, has hazarded the hypothesis, that the two religious sects of India, the worshippers of Vishnoo, and those of Siva, had spread themselves into America; and that the Peruvian worship was that of Vishnoo, when he appeared under the figure of Crishna, or the Sun; while the sanguinary worship of the Mexicans is analogous to that of Siva, when he takes the character of the Stygian Jupiter. The wife of Siva, the black goddess Cali, or Bhavani†, the symbol of death and destruction, wears, in the Indian statues and paintings, a necklace of human skulls: and to her the Vedas enjoin the offering of human sacrifices. The ancient worship of Cali, the horrible cruelty of which was mitigated by the reform of Bouddha, forms no doubt a great resemblance with the worship of Mictlancihuatl, the goddess of Hell, and with that of several other Mexican divinities: but in studying the history of the people of Anahuac, we are tempted to consider these resemblances as merely accidental. We have no right to presume communications, wherever we find, among

\* Frederic Leopold, Count Stolberg, *Geschichte der Religion Jesu Christi*, B, 1, p. 426.

† *Asiatic Researches*, vol. 1, p. 203 et 293.

half civilized people, the worship of the Sun, or the custom of sacrificing human victims; and this custom, far from having been brought from eastern Asia, may very probably have taken birth in the valley of Mexico itself. In fact, history instructs us, that, when the Spaniards arrived at Tenochtitlan, this sanguinary worship, which reminds us of those of Cali, of Moloch, and of the Esus of the Gauls, had existed only two hundred years.

The nations, which from the seventh to the twelfth century have successively inundated Mexico, the Toltecks, the Chichimecks, the Nahuatlacks, the Acolhuans, the Tlascaltecks, and the Aztecks, formed a single group, connected by analogy of language and manners; somewhat like the Germans, the Norwegians, the Goths, and the Danes, who are all confounded in a single race, that of the Germanic nations. It is probable, as we have already stated, that other nations, the Otomites, the Olmecks, the Cuitlatecks, the Zacatecks, and the Tarascks, appeared before the Toltecks in the equinoctial region of New Spain. Wherever nations have advanced in the same direction, the position of the countries in which they are found marks in some sort the chronological order of their migrations. Can we doubt, that in Europe, the most western nations, the Iberians, and the Can-



tabri, arrived thither before the nations the nearest Asia, before the Thracians, the Illyrians, and the Pelasgi ?

But, whatever be the relative antiquity of the different races of men settled in the mountains of Mexico, the Caucasus of America, it appears certain, that none of these nations, from the Olmecks to the Aztecks, had for a long time been acquainted with the barbarous custom of sacrificing human victims. The principal divinity of the Toltecks was called *Tlaloc-teuctli* ; he was at once the god of water, of mountains, and of tempests. In the eyes of these mountaineers, it is on the lofty summits perpetually enveloped in clouds, that the mysterious preparation of thunder takes place ; there the abode of the great spirit Teotl is fixed ; of that invisible being called *Ipalnemoani* and *Tlock-Nahuack*, because he is self-existent, and contains all things within himself ; and from this almost inaccessible region rushes the tempest, which destroys the hut, and the beneficent rain, which enlivens the fields. The Toltecks had erected on the top of a high mountain the image of Tlaloc-teuctli ; this image, rudely carved, was made of a white stone, considered as divine (*teotetl*), for this people, like the ancient Orientals \*, attached superstitious ideas to the color of certain stones. Tlaloc-teuctli

\* Millii Dissertationes selectæ, p. 309.



was represented with thunder in his hand, seated on a stone in the form of a cube, and having before him a vase in which caoutchouc and seeds were offered him. The Aztecks followed this same worship till the year 1317, when the war with the inhabitants of the town of Xochimilco furnished them with the first idea of a human sacrifice. The Mexican historians, who, immediately after the taking of Tenochtitlan, wrote in their own language, but making use of the Spanish alphabet, have transmitted to us this horrible event.

From the beginning of the fourteenth century the Aztecks lived under the sway of the King of Colhuacan, and had principally contributed to the victory, which this king had gained over the Xochimilcks. When the war was finished, they were desirous of offering a sacrifice to their principal god, Huitzilopochtli, or Mexitli, whose image in wood, placed in a chair of reeds, called the *seat of god*, *teoicpalli*, and carried on the shoulders of four priests, had preceded them in their migration. They asked their master, the King of Colhuacan, to bestow on them some objects of value, to give greater solemnity to this sacrifice. The king, if we may give this title to the chief of a scanty tribe, sent them a dead bird, wrapped in a coarse cloth; and to add mockery to insult, he proposed to them to attend at the festival

himself. The Aztecks professed to be flattered with this offer; but they resolved at the same time to make a sacrifice, which should strike terror into their masters. After a long dance around their idol, they brought forth four Xochimilcks, prisoners, whom they had kept hidden a long time: these miserable captives were immolated with the ceremonies still observed at the time of the conquest by the Spaniards, on the platform of the great pyramid of Tenochtitlan, which was dedicated to the same god of war, Huitzilopochtli. The Colhuans signified their just abhorrence of this human sacrifice, the first which had been made in their country: but fearing the ferocity of their slaves, and seeing them puffed up with pride at the success obtained in the war against the Xochimilcks, they gave the Aztecks their liberty, enjoining them to quit the territory of Colhuacan.

The first sacrifice had happy effects for a nation that was oppressed; vengeance soon gave birth to a second. After the foundation of Tenochtitlan, an Azteck scours the border of the lake, to kill some animal for an offering to the god Mexitli; he meets an inhabitant of Colhuacan, called Xomimitl. Irritated against his former masters, the Azteck attacks the Colhuan: the conquered Xomimitl is led to the

new city, and expires on the fatal stone placed at the foot of the idol.

The circumstances of the third sacrifice were still more tragic. Peace is reestablished apparently between the Aztecks, and the inhabitants of Colhuacan : nevertheless the priests of Mexitli cannot conquer their hatred against a neighbouring nation, that had enslaved them : they meditate atrocious vengeance ; they persuade the King of Colhuacan to entrust them with his only daughter, to be brought up in the temple of Mexitli, where, after her death, she should be worshiped as the mother of this protecting divinity of the Aztecks ; adding, that it was the idol himself, who declared his will by their mouths. The credulous king accompanies his daughter ; he leads her into the dark recess of the temple : there the priests separate the father from the child ; a tumult is heard in the sanctuary ; the unfortunate king does not distinguish the groans of his expiring daughter ; a censer is placed in his hand ; and a few moments after, he is ordered to light the copal. By the pale glare of the rising flame he beholds his child bound to a pillar, her bosom mangled, motionless, and robbed of life. Despair deprived him of the use of reason for the remainder of his days ; he was unable to avenge himself, and the Colhuans dared not

resent the injury done them by a people, who struck them with terror by such an excess of ferocity. The immolated victim is placed among the Azteck divinities, under the name of *Teteionan* \*, mother of the gods, or *Tocitzin*, our grandmother ; a divinity which we must not confound with Eve, or the serpent-woman, called *Tonantzin*.

In the Old Continent, wherever we find traces of human sacrifices, their origin is lost in the night of time. The history of the Mexicans, on the contrary, has handed down to us the narrative of events, which have given a ferocious and sanguinary character to the worship of a people, among whom animals and first fruits were the only primitive offerings. I have thought fit to relate these traditions, undoubtedly founded on historical truth : intimately connected with the study of the manners, and the moral improvement of our species, they appear to me more interesting, than the puerile tales of the Hindoos respecting the numerous *incarnations* of their divinities. I shall not however decide the question, whether the sacrifice of the four Xochimilcks was really the first offered to the god Mexitli : or whether the Aztecks had not preserved some old tradition, according to which they imagined, that the god

\* Clavigero, vol. 1, p. 166, 168, 172 ; vol. 2, p. 22.

of war savored the blood of human victims. Mexitli came into the world with a dart in his right hand, a buckler in his left, and his head covered with a helmet crowned with green feathers ; his first feat at his birth was to kill his brothers and sisters. Perhaps, under other climates, sanguinary rites had been offered to this terrible god, called also *Tetzahuitl*, or the *terrific* ; perhaps this worship had a respite only because prisoners were wanting, and consequently victims ; while the nation, marching under the auspices of Mexitli, made a peaceable progress across the mountains of Tarahumara to the elevated central plain of Mexico.

The continual wars of the Aztecks, after they had fixed their residence on the islets of the salt lake of Tezcuco, furnished them with so considerable a number of victims, that human sacrifices were offered to all their divinities without exception, even to Quetzalcoatl \*, who, like the Bouddha of the Hindoos, had preached against this execrable custom ; and to the goddess of the harvests, the Mexican Ceres, called *Centeotl*, or *Tonacajohua*, she who *feeds mankind*. The Totonacks, who had adopted the whole of the Tolteck and Azteck mythology, distinguished, as of a different race,

\* Gomara, *Chronica general de las Indias*, (edition of 1553), vol. 2, fol. 134.



the divinities that required a sanguinary worship, and the goddess of the fields, who asked only for offerings of flowers and fruits, the sheaf of maize, or the birds that devoured the seeds of this plant, so useful to man. An ancient prophecy gave this nation some hope of a beneficent reform in its religious ceremonies; this prophecy stated, that Centeotl, who is the same with the beautiful Chri, or Lakchmi, of the Hindoos; and whom the Aztecks, like the Arcadians, designated under the name of the *great Goddess*, or *primitive Goddess (Tzinteotl)*; should triumph at last over the ferocity of the other gods; and that human sacrifices should give place to innocent offerings, and the first fruits of the harvests. In this tradition of the Totonacks we behold a struggle between two religions; a conflict between the ancient Tolteck divinity, mild and humane, like the people who had introduced its worship, and the ferocious gods of that warlike tribe, the Aztecks, who had stained the fields, the temples, and the altars, with blood.

When we read the letters of Cortez to the Emperor Charles V. the memoirs of Bernal Diaz, of Motolinia, and other Spanish authors, who had made observations on the Mexicans before the changes wrought on them by their communications with Europe, we are astonished, that

such extreme ferocity in religious ceremonies should be found among a people, whose social and political state reminds us, in other points of view, of the civilization of the Chinese, and the inhabitants of Japan. The Aztecks were not satisfied with dyeing their idols with blood, as is practised still by the Chaman Tartars, who however sacrifice to their *Nogats* oxen and sheep only ; they even devoured a part of the carcase, which the priests threw down to the bottom of the staircase of the teocalli, after having torn out the heart. We cannot mention these objects without inquiring, whether these barbarous rites, which we find also in the islands of the South Sea, among nations whose mild manners have been too much vaunted, would have ceased of themselves, if the Mexicans, without having any communication with the Spaniards, had continued to advance towards civilization. It is probable, that this beneficent reform in their worship, this triumph of the goddess of the harvests over the gods of carnage, would have been very long delayed.

In South America, the most powerful nation, the Peruvians, followed the worship of the Sun. The most bloody wars were waged by the Incas, to introduce a peaceable and gentle religion ; human sacrifices vanished, wherever the descendants of Manco-Capac carried their laws, their

divisions into casts, their language, and their monastic despotism. In the country of Anahuac the sanguinary rites of Huitzilopochtli were established in proportion as the Mexican empire swallowed up all the neighbouring states. The greatness of this empire was founded on an intimate alliance of the class of the priesthood with the nobility destined to the trade of arms. The high priest, *teoteuctli* (*divine Lord*) was generally a prince of the royal blood ; and no war could be undertaken without his permission. The priests even went to combat, and were raised to the first dignities in the army \* ; their influence became thereby as extensive as that of the Roman patricians, who had the exclusive right of augury, and in which a celebrated writer † has seemed to recognize traces of a political institution of the Hindoos.

In Mexico, where the number and the power of the priests (*teopixquis*) and the monks (*tlamacazques*) were almost as great as they are at present in Thibet and Japan, every thing which was the effect of religious fanaticism would have been changed but very slowly. History proves, that the barbarous custom of human sacrifices

\* Peintures hieroglyphiques du Recueil de Mendoza. Thevenot, vol. 4, fol. 57.

† Schlegel, Weisheit der Indier, s. 190.

was preserved for a length of time among the nations most advanced in civilization. The paintings found in the tombs of the kings at Thebes leave no doubt, that these sacrifices were habitual among the Egyptians\*. We have already observed, that formerly in India the goddess Cali required human victims, as Saturn exacted them at Carthage. At Rome, after the battle of Cannæ, two Gauls, a male and female, were buried alive ; and the Emperor Claudius was obliged, to forbid by an express decree the sacrifice of men in the Roman empire†. But still more, in times less remote, what savage effects of religious intolerance do we not ourselves see amid the civilization of the human race, at the period of a general melioration of characters and manners? Whatever be the difference among nations in the progress of their intellectual culture, fanaticism and interest still hold their fatal sway. Posterity will scarcely conceive, that in polished Europe, under the influence of a religion, which, from the nature of its principles, favours liberty, and proclaims the

\* Voyage de Denon, p. 298, pl. 124, No. 2. *Décade Egyptienne*, tom. 3, p. 110.

† Sueton., c. 25, (ed. Wolf., vol. 1, p. 48). Plin. *Hist. Nat.* lib. 31, c. 1 ; lib. 8, c. 22. Tertullian. *Apologet. adversus Gentes*, c. 9 (ed. Palmer, 1684, p. 41). Lactant. *Div. Instit.* lib. 1, c. 21.



sacred rights of mankind, there exist laws, which sanction the slavery of the blacks, which permit the planter to tear the child from its mother's arms, to sell it in a distant land. These considerations prove to us, and the fact is not very consolatory, that whole nations may advance rapidly towards civilization, while their particular institutions, and their religious rites, retain the marks of their original barbarism.

Number 8 indicates the ceremony of kindling the new fire, at the period of the procession which was made every fifty-two years to the summit of a mountain near Iztapalapan.

At the end of each cycle the intercalation was made, sometimes of twelve, and at others of thirteen days. The people, expecting at the same time the fourth destruction of the Sun and the Earth, extinguished all the fires ; till, at the beginning of the new cycle, the priests lighted them anew. The painting represents a victim stretched on the stone of sacrifice, having a wooden disk on the breast, which the teopixqui inflames by rubbing. The hieroglyphic of the starry sky, which we see in the preceding page of the Borgian collection, seems to have a reference to the culmination of the Pleiades. We shall treat farther on, in the explanation of the twenty-third plate, of the connexion, which, it is said, existed between this culmination and the beginning of the cycle.



The art of producing fire, by rubbing together two kinds of wood of different hardness, is of remote antiquity. We find it among the nations of both continents : in the Homeric times, according to M. Visconti, the invention was attributed to Mercury\*. The disk, which lies on the body of the victim, and on which the priest turns the cylindric wood, is the *στορεως* of the Greeks†. Pliny asserts, that of all the woody substances, the ivy is that which ignites best when it is rubbed with laurel wood‡. We have found these *πυρεϊα* among the Indians of the Orinoco. It requires a great rapidity of motion, to raise the temperature to the degree of incandescence.

No. 9. Figure of a dead king, surrounded by four flags, the eyes shut, no hands, the feet wrapped up. The chair is the royal seat called *tlatocaicpalli*, on which is represented, in the Codex Borgianus (fol. 9), Adam, or Tonacateuctli, the *Lord of our flesh*, and Eve, or Tonacacihua. This hieroglyphical character is found figured in the ritual almanack, at the page which indicates the cycle of thirteen

\* Homer. Hymn. in Mercur. v. 180.

† Apollon. Rhod. Argonaut, lib. 1, v. 1184, et *Schol. ad cum.*

‡ Plin. Hist. Natur. lib. 16, c. 77. Seneca Nat. Quæst. II, 22. Theophr. c. 10.

days, during which the Sun passes the zenith at Mexico.

No. 10. An allegory, which reminds us of the purifications of India. A divinity, whose enormous nose is decorated with the figure of the two headed snake, or mysterious amphisbæna, carries in his hand a *xiquipilli*, or a purse of incense: we see on his back a broken vase, from which issues a serpent; another serpent, bleeding, and cut in pieces, is before him; a third serpent, equally mangled, is contained in a chest full of water, from which rises a plant. We discover on the right a man placed in a vase; on the left a woman adorned with flowers, probably the voluptuous Tlamezquimilli, who is represented also with a bandage on her eyes. In the same page we find an agave, which, when cut, yields blood. Does this allegory allude to the serpent that poisons the water, the source of all organic life\*, to the victory of Crishna over the dragon Kaliya, to the seduction and purification by fire? It is evident, that the figure of the serpent in the Mexican paintings represents two different ideas. In the reliefs which indicate the divisions of the year and of the cycles, this figure expresses only time, *ævum*. The serpent represented in company with the *mother of men* (Cihuaçohuatl),

\* Paullinus de S. Bartholomæo, Codices Avenses, p. 235.

or crushed by the great spirit, Teotl, when he takes the form of one of the subaltern divinities, is the genius of evil, a real *κακοδαίμων*. Among the Egyptians this last idea was expressed, not by the hieroglyphic of the serpent\*, but that of the hippopotamus. Les figures sans vêtemens, comme celle du groupe No. 10, et la déesse de la volupté, appelée Ixcuina ou Tlazolteucihua†, sont extrmêmement rares dans les peintures Mexicaines. En général, les peuples barbares donnent des vêtemens à leurs statues : c'est un raffinement de l'art de présenter le corps nu dans la beauté naturelle de ses formes. Il est très-remarquable aussi que parmi les hiéroglyphes Mexicains on ne découvre absolument rien qui annonce le symbole de la force generatrice, ou le culte du lingam, qui est répandu dans l'Inde et parmi toutes les nations qui ont eu des rapports avec les Hindoux. M. Zoega a observé que l'emblème du phallus ne se trouve pas non plus dans les ouvrages Egyptiens d'une haute antiquité ; il a cru pouvoir en conclure que ce culte est moins ancien qu'on ne le suppose. Cette assertion est cependant contraire aux notions que Hamilton, Sir William Jones, and M. Schlegel, ont puisées dans le

\* Zoega, p. 443, n. 35.

† Codex Borg. MSS. fol. 73.

Siva Pourâna \*, dans le Kâsi Khanda, et dans plusieurs autres ouvrages écrits en langue Sanskrit. On ne sauroit douter que l'adoration des douze lingams, venus du sommet de l'Imaüs (Himâvata), ne remonte jusqu'à l'époque des premières traditions des Hindoux. Au milieu de tant d'autres rapports qui annoncent d'anciennes communications entre l'Asie orientale et le nouveau continent, on doit être surpris de ne pas trouver dans ce dernier quelques traces du culte du phallus. M. Langles † observe expressément que, dans l'Inde, les Vaichnava, ou sectateurs de Vichnou, ont horreur de cet emblème de la force productrice, que l'on adore dans les temples de Siva et de son épouse, la déesse de l'abondance, Bhavânî. Ne pourroit-on pas supposer qu'il existe également parmi les Bouddhistes exilés dans le nord-est de l'Asie une secte qui rejette le culte du lingam, et que c'est de ce Bouddhisme épuré qu'on retrouve quelques foibles traces parmi les peuples Américains?

\* Catalogue des Manuscrits Sanskrits de la bibliothèque impériale, p. 36, et 50.

† Recherches Asiatiques, tom. 1, p. 215.

VIEW  
OF  
CHIMBORAZO AND CARGUAIRAZO.

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PLATE XVI.

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A PART of the Cordillera of the Andes is divided into several branches, separated from each other by longitudinal valleys: another part forms only a single mass beset with volcanic summits. In the description of the passage of the mountain of Quindiu (plate 5th) we have attempted to give a geological sketch of the ramifications of the Cordilleras in the kingdom of New Grenada, between  $2^{\circ} 30'$  and  $5^{\circ} 15'$  of northern latitude. We observed at the same time, that the great valleys, placed between the two lateral branches and the central chain, were the basins of two considerable rivers, the bed of which is yet less elevated above the level of the ocean than that of the Rhone, the waters of which have hollowed out the valley of Sion





*A View of the Mountains of Chimborazo and Parícuta in South America.*



in the higher Alps. On advancing from Popayan toward the south, we see on the arid elevated plain of the province of *Los Pastos* the three small chains of the Andes lost in one group, which stretches far beyond the equator.

This group, in the kingdom of Quito, presents an extraordinary appearance from the river of Chota, which meanders amid mountains of basaltic rock to the Paramo of Assuay, on which are seen some remarkable remains of Peruvian architecture. The most elevated summits are arranged in two lines, which form as it were a double ridge to the Cordilleras. These colossal summits, covered with perpetual ice, served for signals in the operations of the French academicians at the time of the measurement of the equinoxial degree. Their symmetrical disposition, in two lines directed from north to south, has led Bouguer to consider them as two chains of mountains, separated by a longitudinal valley: but what this celebrated astronomer calls the bottom of a valley is the summit of the Andes itself; it is an elevated plain, the absolute height of which is from two thousand seven hundred to two thousand nine hundred metres. We must not confound a double ridge with a real ramification of the Cordilleras.

The plain covered with pumice stone, that

forms the fore ground of the drawing of which we here give the description, is a part of this elevated plain, which separates the western from the eastern ridge of the Andes of Quito. In these plains the population of this marvellous country is concentrated ; towns are there built, which contain from thirty to fifty thousand inhabitants. When we have lived for some months on this elevated spot, where the barometer keeps at twenty inches high, we feel the irresistible influence of an extraordinary illusion : we forget by degrees, that every thing which surrounds the observer ; those villages which proclaim the industry of a mountainous people ; those pastures, covered at the same time with herds of lamas, and flocks of European sheep ; those orchards bounded by hedges of *duranta* and *barnadesia* ; those fields cultivated with care, and promising the richest harvests ; hang as it were suspended in the lofty regions of the atmosphere : we scarcely recollect, that the soil we inhabit is more elevated above the neighbouring coasts of the Pacific Ocean, than the summit of Canigou above the basin of the Mediterranean.

Considering the ridge of the Cordilleras as a vast plain curtained by distant mountains, we accustom ourselves to look on the inequalities of the summit of the Andes as so many isolated tops. Pichincha, Cayambé, Cotopaxi,



all those volcanic peaks, which we call by particular names, though at more than half their total height they form but one mass ; appear to the eyes of the inhabitant of Quito as so many distinct mountains, which tower amid a plain unclothed by forests. This illusion is so much the more complete, as the breaches in the double ridge of the Cordilleras reach down to the level of the high inhabited plains. Hence the Andes have the appearance of one chain only when they are seen at a distance, from the coasts of the great ocean, or from the savannahs, which extend to the foot of their eastern declivity. Placed even on the ridge of the Cordilleras, either in the kingdom of Quito, or in the province of Los Pastos, or still farther to the north, in the interior of New Spain, we see only a heap of scattered summits, groups of isolated mountains, which detach themselves from the central elevated plain ; the greater the mass of the Cordilleras, the more difficult it is to contemplate as a whole their structure and their form.

The study of this form, however, or, if I may be allowed the expression, of this physiognomy of the mountains, is singularly facilitated by the direction of the lofty plains, which constitute the ridge of the Andes. When we travel from the city of Quito to the Paramo of Assuay, we see, in a journey of thirty-seven leagues to the



west, the summits of Casitagua, Pichincha, Atacazo, Corazon, Iliniza, Carguairazo, Chimborazo, and Cunambay, rise in succession ; and to the east the tops of Guamani, Antisana, Passuchoa, Ruminnavi, Cotopaxi, Quelendanna, Tungurahua, and Capa-Urcu, which, with the exception of three or four, are all higher than Mount Blanc. These mountains are so arranged, that, viewed from the central plain, far from hiding each other, they exhibit themselves in their real shape, as if projected on the azure vault of the sky ; we imagine we behold on the same vertical plane their summit and their peak ; they remind us of the stupendous view of the coasts of New Norfolk and Cook's River : and appear like a bold rocky coast, which, rising from the bosom of the waters, seem so much the less distant, as no object is placed between the shore and the eye of the observer.

But if the structure of the Cordilleras, and the form of the central elevated plain, are favorable for geological observations ; if they enable the traveller to examine with facility the outlines of the double ridge of the Andes : the enormous elevation of this plain gives a less appearance of loftiness to summits, which, if placed on islets, scattered along the immensity of the ocean, like Mowna-Roa and the Peak of Teneriffe, would astonish more by their stupendous height. The plain of Tapia, seen on the fore-

ground of the sixteenth plate, and in which I have sketched, near Riobamba-Nuevo, the group of Chimborazo and Carguaiazo, has an absolute elevation of 2891 metres (1493 toises); it is only a sixth less elevated than the top of Etna. The summit of Chimborazo does not therefore surpass the height of this plain more than 3640 metres, which is 84 metres less than the height of the top of Mount Blanc above the priory of Chamonix; for the difference between Chimborazo and Mount Blanc is nearly equal to that which is observed between the elevation of the plain of Tapia, and the bottom of the valley of Chamonix. The top of the Peak of Teneriffe, compared with the level of the town of Oratava, is still more elevated than Chimborazo and Mount Blanc above Riobamba and Chamonix.

Mountains which would astonish as by their height, if they were placed near the sea-shore, seem to be but hills when they rise from the ridge of the Cordilleras: Quito, for instance, is backed by a small cone called Javirac, which does not seem higher to the inhabitants of that city, than Mountmartre, or the heights of Meudon, appear to the inhabitants of Paris. This cone of Javirac, according to my measurement, is, however, 3121 metres (1600 toises) of absolute height; and is almost as lofty as the

summit of Marbore, one of the highest summits of the chain of the Pyrenees.

Notwithstanding the effects of this illusion produced by the height of the plains of Quito, of Mulalo, and Riobamba, we should seek in vain near the coasts, or on the eastern slope of Chimborazo, a place that would afford so magnificent a view of the Cordilleras, as that I enjoyed for several weeks in the plain of Tapia. When we are placed on the back of the Andes, between the double ridge formed by the colossal tops of Chimborazo, Tungurahua, and Cotopaxi, we are still near enough their summits to see them under angles of considerable altitude ; but in descending toward the forests, which environ the foot of the Cordilleras, these angles become very small ; for, on account of the enormous mass of the mountains, we rapidly leave the summits at a distance, in proportion as we approach the level of the ocean.

I have sketched the outlines of Chimborazo and Carguairazo, by the use of the same graphic means as I have already mentioned, when I spoke of the drawing of Cotopaxi. The line marking the inferior limits of the perpetual snows is at a height, which somewhat exceeds that of Mount Blanc, for this last mountain, if placed under the equator, would be covered but occasionally with snow. The constant tem-

perature, which reigns under this zone, is the cause why the limit of perpetual ice is not subject to those irregularities, which we observe in the Alps and the Pyrenees. On the northern declivity of Chimborazo, between that mountain and Carguairazo, the road leads from Quito to Guayaquil, and toward the coasts of the Pacific Ocean. The paps covered with snow, which rise on this side, remind us, by their form, of that of the dome of Gouté, seen from the valley of Chamonix. On a narrow ridge, which rises amidst the snows on the southern declivity, M. M. Bonpland, Montufar, and myself, attempted to reach, not without danger, the summit of Chimborazo. We carried instruments to a considerable height, though we were surrounded by a thick fog, and very much incommoded by the great tenuity of the air. The point where we stopped to observe the inclination of the magnetic needle was more elevated than any yet attained by man on the ridge of mountains ; it was more than eleven hundred metres higher than the top of Mount Blanc, which the most enlightened and most intrepid of travellers, Mr. de Saussure, had the satisfaction of reaching, after struggling against difficulties still greater than those we had to conquer near the summit of Chimborazo. These laborious excursions, the narratives of which generally excite the attention of the public, offer but a very small number



of results useful to the progress of science ; the traveller finds himself on ground covered with snow, in a stratum of air, the chemical mixture of which is the same as that of the lower regions, and in a situation in which delicate experiments cannot be made with all the exactness requisite.

If we compare the fifth, tenth, and sixteenth plates of this work with those of the geographical and physical Atlas, which accompanies my Essay on the Kingdom of New Spain, we distinguish three kinds of principal forms belonging to the high tops of the Andes. The volcanoes which are yet burning, those which have but a single crater of extraordinary size, are conic mountains, with summits truncated in a greater or less degree : such is the figure of Cotopaxi, of Popocatepec, and the Peak of Orizaba. Volcanoes, the summits of which have sunk after a long series of eruptions, exhibit ridges bristled with points, needles leaning in different directions, and broken rocks falling into ruins. Such is the form of the Altar, or Capac-Urcu, a mountain once more lofty than Chimborazo, and the destruction of which is considered as a memorable period in the natural history of the New Continent ; such is the form also of Carguairazo, a great part of which fell in on the night of the 19th of July, 1698. Torrents of water and mud then issued from the opened sides of the moun-



tain, and laid waste the neighbouring country. This dreadful catastrophe was accompanied by an earthquake, which, in the adjacent towns of Hambato, and Llaetacunga, swallowed up thousands of inhabitants.

A third form of the high tops of the Andes, and the most majestic of the whole, is that of Chimborazo, the summit of which is circular ; it reminds us of those paps without craters, which the elastic force of the vapours swells up in regions where the hollow crust of the Globe is mined by subterraneous fires. The aspect of mountains of granite has little analogy with that of Chimborazo. The granitic summits are flattened hemispheres ; the trappean porphyry forms slender cupolas. Thus on the shore of the South Sea, after the long rains of winter, when the transparency of the air has suddenly increased, we see Chimborazo appear like a cloud at the horizon ; it detaches itself from the neighbouring summits, and towers over the whole chain of the Andes, like that majestic dome, produced by the genius of Michael Angelo, over the antique monuments, which surround the Capitol.

## PERUVIAN MONUMENT

AT

CANNAR.

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PLATE XVII.

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THE lofty plains, that stretch along the back of the Cordilleras from the equator to the third degree of south latitude, end where a mass of mountains rises from four thousand five hundred to four thousand eight hundred metres of height, which like an enormous dyke unites the eastern to the western ridge of the Andes of Quito. This group of mountains, in which porphyry covers mica-slate and other rocks of primitive formation, is known by the name of the *Paramo del Assuay*. We were obliged to cross it, in order to go from Riobamba to Cuenca, and to visit those beautiful forests of Loxa, which are so celebrated for their fruitfulness in bark \*. The

\* Cinchona.

journey over Assuay is formidable, especially in the months of June, July, and August, when there are immense falls of snow, and the icy winds of the south sweep over these regions. As the high road, according to the measures I took in 1802, is almost the height of Mount Blanc, the travellers are exposed to a cold so excessive, that several perish every year from its effects. In the middle of this journey, at the absolute height of four thousand metres, we cross a plain, the extent of which is six square leagues. This plain (and this remarkable fact throws some light on the formation of elevated plains) is almost on the level of the savannahs, by which the part of the volcano of Antisana covered with eternal snows is surrounded. The elevated plains of Assuay and of Antisana, the geological construction of which has such striking resemblances, are nevertheless more than fifty leagues distant from each other: they contain lakes of fresh water of considerable depth, and bordered by a thick turf of Alpine grasses, but no fish, and scarcely any aquatic insect, enlivens their solitude.

The soil of the Llano del Pullal, the name given to the high plains of Assuay, is excessively marshy. We were surprised to find in this place, and at heights which greatly surpass the top of the Peak of Teneriffe, the magnificent re-

mains of a road constructed by the Incas of Peru. This causeway, lined with free-stone, may be compared to the finest Roman roads I have seen in Italy, France, or Spain: it is perfectly straight, and keeps the same direction for six or eight thousand metres. We observed the continuation of this road near Caxamarca, 120 leagues to the south of Assuay; and it is believed in the country, that it led as far as the city of Cuzco. Near this road over the Assuay, at the absolute height of 4042 metres (2074 toises) are the remains of the palace of the Inca Tupaynpangi, the ruins of which, commonly called *los Pare-dones*, are but of small elevation.

In descending from the Paramo of Assuay, toward the south, we discover, between the farms of Turche and Burgay, another monument of ancient Peruvian architecture, known under the name of *Ingapilca*, or the fortress of Cannar. This fortress, if we can so call a hill terminated by a platform, is much less remarkable for its height, than its perfect preservation. A wall built of large blocks of free-stone rises to a height of five or six metres. It forms a very regular oval, the great axis of which is nearly thirty-eight metres in length. The interior of this oval is a flat piece of ground covered with rich vegetation, which increases the picturesque effect of the landscape. In the centre of the enclosure is

a house, containing only two rooms, which are near seven metres in height. This house and the enclosure, represented in the sixteenth plate, form part of a system of walls and fortifications, of which we shall hereafter speak, and which are more than one hundred and fifty metres in length. The cut of the stones, the disposition of the doors and niches, the perfect analogy between this edifice and those of Cuzco, leave no doubt respecting the origin of this military monument, which served as a lodging to the Incas, when those princes journeyed occasionally from Peru to the kingdom of Quito. The foundations of a great number of edifices, which surround the enclosure, indicate, that there was room enough at Cannar to lodge the small army, which generally attended the Incas in their journeys. I found among these foundations a stone cut with great nicety, as represented in the fore-ground of the drawing on the left: but I cannot guess the purpose, for which it was shaped in this particular manner.

What is most curious in this small edifice, surrounded by a few trunks of *schinus molle*, is the form of its roof, which gives it a perfect resemblance to European houses. One of the first historians of America, Pedro de Cieca de Leon, who began to describe his travels in 1541, gives the detail of several houses of the Inca in the province of Los Canares. He expressly



says \*, that the edifices of Thomebamba have a covering of rushes, so well made, that, if it be not consumed by fire, it will last without alteration for several ages. From this observation we may be led to believe, that the gable of the house of Cannar was added after the conquest; and what seems especially to favor this hypothesis is the existence of open windows in this part of the building; for it is certain, that in the edifices of ancient Peruvian construction, as in the remains of the houses of Pompeia and Herculaneum, no windows are to be found.

M. de la Condamine, in a very interesting Memoir on some ancient Monuments of Peru †, is inclined also to think, that the gable which we observe in the small edifice at Cannar is not of the time of the Incas. He says, “that it is perhaps of modern fabrication; and that it is not of free-stone like the rest of the walls, but of a kind of brick dried in the air, and kneaded with straw.” He adds in another place, that the use of those bricks, to which the Indians gave the name of *tica*, was known to the Peruvians long before the arrival of the Spaniards; and that, for this reason, the gable may be of ancient construction, though formed of bricks.

\* Pedro de Cieca de Leon, *Chronica del Peru* (Anvers, 1554), tom. 1, c. 44, p. 120.

† *Memoires de l'Académie de Berlin*, 1746, p. 444.

I regret very much not having read the *Memoirs* of M. de la Condamine before my voyage to America ; I am very far from throwing any doubt on the observations of this celebrated traveller, whose labours obliged him to remain a long time in the environs of Cannar, and who had much more leisure than myself to inspect this monument. I am nevertheless surprised, that while examining on the spot itself the question, whether the roof of this building was added in the time of the Spaniards, neither M. Bonpland nor myself was struck with the difference of construction, which is said to exist between the wall and the gable above it. I found no bricks (*ticas* or *adobes*) ; they seemed to me to be merely freestones, covered with a kind of yellow stucco, easy to detach, and mixed with *ichu*, or chopped straw. The owner of a neighbouring farm, who accompanied us in our excursion to the ruins of Cannar, boasted, that his ancestors had greatly contributed to the destruction of this edifice ; he related to us, that the sloping roof had been covered, not in the European manner, that is, with tiles, but with stones slit very thin and highly polished. It was this circumstance particularly, which made me lean then to the opinion, probably erroneous, that, excepting the four windows, the rest of the edifice was such as it had been built in the time of the Incas. However this may be, we must allow, that the use of

roofs with acute angles would have been highly useful in a country of mountains subject to violent rains. These sloping roofs are known to the natives of the north-west coast of America; and were known in the south of Europe in the most remote times, as several Greek and Roman monuments prove; particularly the reliefs on the column of Trajan, and the paintings of landscapes found at Pompeia, and formerly preserved in the fine collection of Portici. The angle at the top of the roof was obtuse among the Greeks; and a right angle among the Romans, who lived in a less favoured climate than that of Greece. The farther we advance toward the north, the more sloping are the roofs.

The drawing of the seventeenth plate was made at Rome, after a sketch of my own, by Mr. Gmelin, an artist justly celebrated for his talents, and the great extent of his knowledge: during my last abode in Italy, he honoured me with his particular friendship, and it is to his care, that I am in a great measure indebted for what, in this book, may not appear altogether unworthy of exciting the interest of the public.

## ROCK OF INTI-GUAICU.

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### PLATE XVIII.

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IN descending the hill, the summit of which is crowned by the fortress of Cannar, to a valley hollowed by the river Gulan, we find small foot-paths cut in the rock: these paths lead to a fissure, which in the Qquichua language is called *Inti-Guaicu*, or the ravine of the Sun. In this solitary spot, shaded by a beautiful and luxuriant vegetation, rises an insulated mass of sandstone, which is only four or five metres high. One of the surfaces of this small rock is remarkable for its whiteness: it is cut perpendicularly as if it had been worked by the hand of man. On this smooth and white ground are concentric circles, which represent the image of the Sun, such as at the commencement of civilization we see it figured among every nation of the Earth. These circles are of a blackish brown; and in the space they enclose we perceive features half effaced, which indicate two eyes and a mouth. The foot of the rock is cut into

steps, which lead to a seat hollowed out in the same stone, and so placed, that from the bottom of a hollow the image of the sun may be seen.

The natives relate, that, when the Inca Tupayupangi advanced with his army to make the conquest of the kingdom of Quito, then governed by the Conchocando of Lican, the priests discovered on the stone the image of the divinity, whose worship ought to be introduced among the conquered nations. The inhabitants of Cuzco thought they every where beheld the figure of the Sun, as the Christians, under every zone, have found either crosses, or the print of the feet of the Apostle St. Thomas, traced on rocks. The Peruvian prince and his soldiers considered the discovery of the stone of Inti-Guaicu as of happy augury: it contributed, without doubt, to induce the Incas to build a habitation at Cannar: for it is known, that the descendants of Manco-Capac considered themselves as the children of the star of day, an opinion which offers a singular coincidence between the first legislator of Peru, and that of India\*, who was also called *Vaivasaouta*, or son of the Sun.

\* Menou 2, or Satyavrata. Recherches Asiatiques, tom. 1, p. 170; tom. 2, p. 172. Paolin. Systema Brachman, p. 141.



On a close examination of the rock of Inti-Guaicu we discovered, that the concentric circles were small veins of brown iron ore, very common in every formation of sandstone. The features, which indicate the eyes and the mouth, are evidently traced by means of some metallic tool; we may suppose, that they were added by the Peruvian priests, in order to impose more readily on the people. On the arrival of the Spaniards, the missionaries were highly interested in withdrawing from the eyes of the natives whatever was the object of ancient veneration; and we still find traces of the chisel employed in effacing the image of the Sun.

According to the interesting researches of Mr. Vater, the word *Inti*, Sun, offers no analogy with any known idiom of the Old Continent. In general, out of eighty-three American languages examined by this respectable writer, and by Dr. Barton of Philadelphia, we have hitherto recognized but one hundred and thirty-seven roots, which were found in the languages of Asia and Europe; namely, in those of the Mantchou Tartars, the Monguls, the Celts, the Biscayans, and the Esthonians. This curious result seems to prove what we have already advanced in speaking of the mythology of the Mexicans. It cannot be doubted, that the greater part of the nations of America belong to a race of men,

who, isolated ever since the infancy of the world from the rest of mankind, exhibit in the nature and diversity of language, in their features and the conformation of their skull, incontestable proofs of an early and complete separation.

# YNGA-CHUNGANA,

NEAR CANNAR.

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## PLATE XIX.

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To the north of the ruins of Cannar rises a chain of hills, the slope of which toward the house of the Inca is very gentle, while it is almost perpendicular on the side of the valley of Gulan. According to the traditions among the natives, this hill formed part of the gardens, that surrounded the ancient Peruvian fortress. We here found, as near the *ravine of the Sun*, a great number of small pathways cut on the slope of a rock, which is scarcely covered with vegetable mould.

Near Mexico, in the gardens of Chapoltepec, the European traveller views with melancholy feeling cypress trees\*, the trunks of which are more than sixteen metres in circumference; and

\* *Cupressus disticha*, L.

which are thought, with some probability, to have been planted by kings of the Azteck dynasty. In the gardens of the Inca, near Cannar, we sought in vain for some tree, which might seem to have outlived half a century ; nothing indicates the abode of the Incas in these countries, except perhaps a small monument of stone, placed on the brink of a precipice, and on the purpose of which the inhabitants are not agreed.

This small monument, which is called the *Sport of the Inca*, consists in a single mass of stones. The Peruvians employed in its construction the same artifice as the Egyptians did in the sculpture of the sphynx of Geeza, of which Pliny expressly says, “ *e saxo naturali elaborata.*” The rock of quartzose sandstone, which serves as its basis, was diminished, so that, after having taken away the strata which formed the summit, there remained only a seat with an enclosure around, which is represented on this plate. We may be surprised, that a people who heaped together so prodigious a number of free-stones on the superb causeway of Assuay, should have recourse to such singular means to raise a wall three feet high. All the Peruvian works bear the mark of a laborious people, who delighted in hollowing rocks, and in seeking difficulties to show their address in conquering them ; and who imprinted on the most insignificant edifices a character of solidity, from which we

might be led to think, that at some other epocha they could have raised monuments far more considerable.

The *Inga-Chungana*, at a distance, resembles a sofa, the back of which is decorated with a sort of arabesque in form of a chain. On entering the oval enclosure, we perceive, that there is no seat but for one person; but that this person is placed in a commodious manner, so as to enjoy the most delightful prospect over the valley of Gulan. A small river winds along this valley, and forms several cascades, the foam of which is seen through tufts of gunnera and melastomas. This rustic seat would be an ornament to the gardens of Richmond or Ermenonville; and the prince, who had chosen this site, was not insensible to the beauties of nature; he belonged to a people, whom we have no right to style barbarous.

I beheld in this fabric only a seat placed in a delightful spot, at the brink of a precipice, on the steep declivity of a hill that commands the valley: some old Indians, who are the historians of the country, find this explanation too simple; they assert, that the hollow sculptured chain on the edge of the enclosure was formed to receive little balls, which were rolled along it for the amusement of the prince. We must admit, that the edge, on which is the Arabesque, has some slope; and that the ball, at the place where the



wall is perceptibly lower, might have mounted, as much as it had descended, if thrown with sufficient force : but were this supposition true, should we not find at the end of the chain some hole, to receive the balls when their course was finished ? The place where the wall of the enclosure is the lowest, the point opposite the seat, corresponds to an opening in the rock on the brink of the precipice. A narrow pathway, cut in the sandstone, leads to this grotto, in which, according to the tradition among the natives, there are treasures hidden by Atahualpa. They say too, that a streamlet formerly ran along this pathway. Is it there that we should look for the *Sport of the Inca* ? and was this enclosure so situate, that the prince could conveniently see what passed on the steep declivity of the rock ? We shall speak more of this grotto in the narrative of our journey to Peru.

# INTERIOR

OF THE

HOUSE OF THE INCA AT CANNAR.

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## PLATE XX.

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THIS plate represents the plan and inside of the small building, which occupies the centre of the esplanade in the citadel of Cannar, and which M. La Condamine thought destined for a guard-house. I sketched this drawing with the greater exactness, because the remains of Peruvian architecture scattered along the ridge of the Cordilleras, from Cuzco to Cayambé, or from the thirteenth degree of north latitude to the equator, all bear the same character in the cut of the stones, the shape of the doors, the symmetrical disposal of the niches, and the total absence of exterior ornaments. This uniformity of construction is so great, that all the stations (*tambos*) along the high roads, called, in the country, houses or palaces of the Inca, appear to have been copied from each other. Peruvian archi-

ecture was limited to the wants of a nation of mountaineers ; it had neither columns, nor pilasters, nor circular arches : these natives of a rocky country, of elevated plains almost destitute of trees, were not led, like the Greeks and Romans, to imitate in their architecture the assemblage of a construction in wood ; simplicity, symmetry, and solidity, were the three characters, by which all Peruvian edifices were distinguished.

The citadel of Cannar, and the square buildings surrounding it, are not constructed with the same quartzose sandstone, which covers the primitive slate and the porphyries of Assuay, and which appears at the surface in the garden of the Inca, as we descend toward the valley of Gulan. Neither are the stones used for the edifices of Cannar granite, as M. de la Condamine thought, but a trappean porphyry of great hardness, enclosing vitreous feldspar and hornblende. This porphyry was perhaps dug in the great quarries, which are found at four thousand metres of height near the lake of Culebrilla, more than three leagues distant from Cannar. It is certain at least, that these quarries furnished the fine stone employed in the house of the Inca, situate in the plain of Pullal, at an elevation almost equal to that of the Puy de Dome if placed on the summit of Canigou.

We do not find in the ruins of Cannar those

stones of enormous size, which we see in the Peruvian edifices of Cuzco and the neighbouring countries. Acosta measured some at Traquanaco, which were twelve metres (thirty-eight feet) long, five metres, eight tenths (eighteen feet) broad, and one metre nine tenths (six feet) thick. Pedro Cieça of Leon saw some of the same dimensions in the ruins of Tiahuanaco\*. In the citadel of Cannar I saw no stones that exceeded twenty-six decimetres (eight feet) in length. They are in general much less remarkable for their bulk, than the extreme beauty of their shape ; the greater part are joined without any appearance of cement. We nevertheless recognise cement in some of the buildings surrounding the citadel, and in the three houses of the Inca at Pullal, each of which is more than fifty-eight metres long. This cement is formed of a mixture of small stones and argillaceous marl, which effervesces with acids ; it is a true mortar, of which I detached considerable portions with a knife, by digging into the interstices which were left between the parallel courses of the stones. This fact deserves some attention ; because the travellers who preceded us have all asserted, that the Peruvians were unacquainted with the use of mortar ; but the supposition, that the Peruvians were as ignorant in this point

\* Cieça, *Chronica del Peru* (Anvers, 1554), p. 254.

as the ancient inhabitants of Egypt, is erroneous. The Peruvians not only employed a marly mortar in the great edifices of Pacaritambo\*, but made use of a cement of asphaltum (*betun*); a mode of construction, which on the banks of the Euphrates and the Tigris may be traced back to the remotest antiquity.

The porphyry made use of for the buildings of Cannar is cut into parallelopipedons with such perfection, that the joints of the stone would be imperceptible, as M. de la Condamine remarks, if their exterior surface were a plane; but the outer surface of each stone is slightly convex, and cut slantingly towards the edge; so that the joints form small flutings, which serve as ornaments, like the separations of the stones in rustic work. This cut of the stone, which the Italian architects call *bugnato*, is found in the ruins of Callo, near Mulado, where I have sketched it in detail†: it gives the walls of the Peruvian buildings a great resemblance to certain Roman structures, for instance, to the *muro di Nerva* at Rome.

What chiefly characterizes the monuments of Peruvian architecture is the form of the doors, which are generally nineteen or twenty decimetres (six or eight feet) high, so that the Inca,

\* Cieça, *Chronica del Peru* (Anvers, 1554), 234.

† See pl. 24, (9 of the edition in 8vo).



or great nobles might pass, though carried in a palanquin on the shoulders of their subjects. The door-posts were not parallel, but inclined, probably in order to use stone lintels of less dimensions. The niches (*hoco*) hollowed in the walls, and serving for cupboards, imitate the form of these *porte rastremate*: the inclined position of these parts in the Peruvian edifices gives them some resemblance to those of Egypt, in which the lintels are always shorter than the thresholds. Between the hocoës are cylindric stones, with polished surfaces, which project out of the wall to the length of five decimetres; the natives assured us, that they were used to hang weapons or ornaments on. We observed also in the corners of the walls cross pieces of porphyry of a singular shape. M. de la Condamine thinks, that they were intended to join the two walls. I am rather inclined to believe, that the cords of their hammocks were fastened round these cross pieces; at least we find similar pieces of wood, serving for this purpose, in all the huts of the Indians of the Orinoco.

The Peruvians showed surprising dexterity in cutting the hardest stones. At Cannar we find curved grooves hollowed in the porphyry, to supply the want of hinges to the doors. La Condamine and Bouguer saw in old edifices, built in the time of the Incas, ornaments of porphyry, representing the muzzles of animals, in

the perforated nostrils of which were moveable rings of the same stone \*. When I crossed the Cordilleras by the Paramo of Assuay, and saw the enormous masses of stone extracted from the porphyry quarries of Pullal, employed in constructing the high roads of the Inca, I already began to doubt, whether the Peruvians were not acquainted with other tools beside hatchets of flint ; I suspected, that grinding was not the only method they had employed to smooth the stones, or give them a regular and uniform convexity ; and I then adopted an opinion contrary to the ideas generally received ; I conjectured, that the Peruvians had tools of copper, which mixed with a certain proportion of tin acquires considerable hardness. This conjecture has been justified by the discovery of an ancient Peruvian chisel, found at Vilcabamba, near Cuzco, in a silver mine worked in the time of the Incas. This valuable instrument, for which I am indebted to the friendship of P. Narcissus Gilbar, and which I have brought to Europe, is twelve centimetres long and two broad. The metal of which it is composed has been analyzed by Mr. Vanquelin, who found in it 0·94 of copper, and 0·06 of tin. This *keen copper* of the Peruvians is almost identical with that of the

\* Mémoires de l'Académie de Berlin, 1746, p. 452, lib. 7, f. 4.

Gallic axes, which cut wood as if they had been of steel \*. Every where in the Old Continent, at the beginning of the civilization of nations, the use of copper mixed with tin (χαλκος) prevailed over that of iron, even in places where the latter had been for a long time known.

\* See my Political Essay on New Spain, vol. 3, p. 306, edition in 8vo.

## AZTECK BAS-RELIEF,

FOUND IN THE

GREAT SQUARE OF MEXICO.

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PLATE XXI.

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THE cathedral of Mexico, represented in the third plate, is built on the ruins of the *teocalli*, or *house of the God* Mexitli. This pyramidal monument, constructed by king Ahuizotl, in 1486, was thirty-seven metres high from its basis to the upper platform, whence there is an extensive view over the lakes, the surrounding country strown with villages, and the mountains that skirt the valley. The platform, which served as an asylum in battle, was crowned by two chapels in the form of towers, each of which was seventeen or eighteen metres, so that the whole *teocalli* was fifty-four metres high. The heap of stones, that formed the pyramid of Mexitli, was used after the siege of Tenochtitlan, to raise the *Plaza Mayor*. In digging eight or ten metres deep, a great number of colossal idols, and other

remains of Aztec sculpture, were discovered: in fact, three curious monuments, of which we shall give a description in this work, the *stone of sacrifices*, the colossal statue of the goddess *Teoyaomiqui*, and the *stone of the Mexican calendar*, were found, when the Viceroy, Count Revillagigedo, levelled the great square of Mexico, by lowering the ground. A very credible person, who had been commissioned to direct these works, assured me, that the foundations of the cathedral are surrounded by an immense quantity of idols and reliefs, and that the three masses of porphyry, which we have just mentioned, are the smallest of those discovered in digging to the depth of twelve metres. Near the *capilla del sagrario* a sculptured rock was discovered, which was seven metres long, six broad, and three in height; the workmen, finding that they could not get it out, were about to break it in pieces; but happily they were diverted from their intention by a canon of the cathedral, Mr. Gamboa, an enlightened friend of the arts.

The stone, which is commonly known by the name of the stone of sacrifices (*piedra de los sacrificios*), is of cylindrical form: it is 3 metres broad, and 11 decimetres in height; it is surrounded with a relief, in which we find twenty groups of two figures, all represented in the same attitudes. One of these figures is constantly the



same: it is a warrior, perhaps a king, who has his right hand resting on the helmet of a man, who is offering him flowers as a mark of obedience. Mr. Dupé, whom I had occasion to mention at the beginning of this work, has copied the whole relief; I convinced myself on the spot of the exactness of his drawing, a part of which is engraven on the plate; and I have chosen the remarkable group, which represents a bearded man. It is observable, that in general the Mexican Indians have somewhat more beard than the rest of the natives of America; it is not rare even to see some with mustaches. Was there ever formerly a province, the inhabitants of which wore a long beard? Or is that which we see in the relief artificial? and is it a part of those fantastic ornaments, by which warriors sought to inspire their enemies with terror?

Mr. Dupé's opinion seems to me well-founded, that this sculpture represents the conquests of an Azteck king. The conqueror is always the same, the vanquished warrior wears the dress of the nation to which he belongs, and of which he may be said to be the representative. Behind the prisoner is placed the hieroglyphic, that denotes the conquered province. In the collection of Mendoza, the conquests of a king are in the same manner indicated by a buckler, or bundle of arrows, placed between the king and the symbolical characters or arms of the subjected

countries. As the Mexican prisoners were offered up in the temples, it would appear natural enough, that the triumphs of a warrior king should be figured around the fatal stone, on which the *topiltzin* (the sacrificing priest) tore out the heart of the unhappy victim. What has caused this hypothesis to be adopted is, that the upper surface of the stone has a groove of some depth, which appears to have been cut to let the blood run off.

Notwithstanding these apparent proofs, I am inclined to think, that the *stone of the sacrifices* was never placed at the top of a *teocalli*; but was one of those stones, called *temalacatl*, on which the *combat of the gladiators* took place between the prisoner destined to be sacrificed and a Mexican warrior. The real stone of sacrifices, that which crowned the platform of the *teocalli*, was green, either jasper, or perhaps jade\*; its form was that of a parallelopipedon, fifteen or sixteen decimetres in length, and a metre in breadth; its surface was convex, so that the victim stretched upon the stone had the breast raised higher than the rest of his body. No historian states, that this block of green stone was sculptured; the great hardness of the rocks of jasper and jade no doubt formed an obstacle to the execution of a bass-relief. On com-

\* Beilstein of Werner.

paring the cylindric block of porphyry found in the great square of Mexico, with those oblong stones, on which the victim was thrown when the topiltzin approached, armed with a knife of obsidian, we easily conceive, that these two objects offer no resemblance either in matter or in form.

It is easy, on the contrary, to recognise, in the description which ocular witnesses have given of the *temalacatl*, the stone on which the prisoner destined for sacrifice fought, that of which Mr. Dupé has sketched the relief. The unknown author of the work published by Ramusio, under the title of *Relazione d'un Gentiluomo di Fernando Cortez*, expressly says, that the *temalacatl* had the form of a mill-stone, was three feet thick, had figures sculptured round it, and was large enough to serve for a combat between two persons. This cylindrical stone was placed on a platform raised three metres in height. The prisoners most distinguished for their courage or their rank were reserved for the *sacrifice of the gladiators*. Placed on the *temalacatl*, surrounded by an immense crowd of spectators, they were to fight six Mexican warriors in succession ; if they were fortunate enough to conquer them, their liberty was granted them, and they were permitted to return to their own country ; if, on the contrary, the prisoner sunk under the strokes of one of his adversaries, a priest,

called *chalchiuhtephua*, dragged him dead or living to the altar, and tore out his heart.

It is possible, that the stone, which was found in digging round the cathedral, was the same *temalacatl*, which the *gentiluomo* of Cortez asserts having seen near the enclosure of the great *teocalli* of Mexitli. The figures of the relief are nearly sixty decimetres high. Their shoes are very remarkable: the conqueror has his left foot terminated by a kind of beak, which appears to be a defensive weapon. We may be surprised at finding this weapon, to which I know of nothing analogous among other nations, only on the left foot. This same figure, the stunted body of which reminds us of the earliest Etruscan style, holds the prisoner by the helmet, grasping it with his left hand. In a great number of Mexican paintings, which represent battles, we see warriors holding their weapons in the left hand: they are represented acting rather with this hand than with the right. We might be led to think at first sight, that this singularity is the result of peculiar habits; but, on examining a great number of historical hieroglyphics of the Mexicans, we observe, that their painters placed weapons sometimes in the right, and at other times in the left hand \*, as it happened to produce a symmetrical disposition in

\* Cod. Vat. anon. fol. 86.



the groups ; I found several striking examples in looking through the *Codex Anonymus* of the Vatican, in which we found Spaniards holding the sword in the left hand. This singularity of confounding the right with the left is also characteristic of the beginning of the art ; we observe the same in some Egyptian reliefs ; we even find in the latter right hands fastened to left arms, whence it results, that the thumb seems placed on the outside of the hand. Learned antiquaries have been induced to think, that there was something mysterious in this extraordinary arrangement, which Mr. Zoega attributes only to mere caprice, or the negligence of the artist.

I much doubt, whether this bass-relief, which encircles the *temalacatl*, and so many other sculptures in basaltic porphyry, were executed by employing only tools of jade, or other very hard stones. It is true, that I have sought in vain to procure some metallic chisel of the ancient Mexicans, like that I brought from Peru : but Antonio de Herera, in the tenth book of his History of the West Indies, says expressly, that the inhabitants of the maritime province of Zacatollan, situate between Acapulco and Calima, prepared two sorts of copper, of which one was hard or cutting, and the other malleable ; the *hard copper* was used to fabricate hatchets, weapons, and instruments of agriculture ; the malleable copper was employed for vases, caldrons, and other



necessary utensils in domestic use. Now, the country of Zacatollan having been subjected by the kings of Anahuac, it does not appear probable, that in the environs of the capital of the kingdom they continued to engrave stones by grinding, if metallic chisels could be procured. This hard Mexican copper was no doubt alloyed with tin, in the same manner as the tool found at Vilcabamba, and that Peruvian hatchet, which Godin sent to M. de Maurepas, and which Count Caylus thought was *tempered copper*.

## BASALTIC ROCKS

AND

## CASCADE OF REGLA.

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PLATE XXII.

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IN changing our latitude and climate, we see a change in the aspect of organic nature, in the form of animals and of plants, which impresses a peculiar character on every zone. With the exception of some aquatic and cryptogamous vegetables, the soil in every region is covered with different plants. It is not so with inanimate nature, with that aggregation of earthy substances, which covers the surface of our planet ; the same decomposed granite, on which, amid the frosts of Lapland, the *vacciniums*, the *andromedas*, and the moss that nourishes the reindeer, vegetate, is found again in those bowers of fern-trees, of palms, and of *heliconia*, the shining foliage of which unfolds itself under the influence of the equatorial heats. When at the end of a long voyage, after passing from one



*Cascade of Regla, near Mexico.*

*Pub<sup>d</sup> by Longman Hurst Rees Orme & Brown Aug<sup>r</sup> 1814*



hemisphere to another, the inhabitant of the north lands on some distant shore, he is surprised to find, amid a crowd of unknown productions, those strata of slate, micaceous schist, and trappean porphyry, that form the arid coasts of the Old Continent bathed by the icy ocean. Under every climate the rocky crust of the Globe presents the same appearance to the traveller ; he every where finds, and not without emotion, in the midst of a New World, the rocks of his native country.

This analogy in unorganized nature extends even to those little phenomena, which we should be tempted to attribute to causes merely local. In the Cordilleras, as well as in the mountains of Europe, granite sometimes offers aggregations in the form of spheroids flattened and divided into concentric layers : under the tropics as well as in the temperate zone, we find in the granite some of those masses abounding in mica and hornblende, which resemble blackish balls enclosed in a mixture of feldspar and milky quartz ; schillerspar is found in the serpentines of the isle of Cuba, as well as in those of Germany ; the mandelstein and perlstein of the elevated plain of Mexico appear identic with those seen at the foot of the Carpathian mountains. The superposition of the secondary rocks follows the same laws in regions the most remote from each



other. In every place the same appearances attest the same order in the revolutions, which have progressively changed the surface of the Globe.

If we go back to physical causes, we ought to be less surprised at finding, that travellers have discovered no new rocks in distant regions. The climate has an influence on the form of animals and of plants, because the play of affinities, which presides over the unfolding of the organs, is modified both by the temperature of the atmosphere, and by that which results from the different combinations formed by chemical action; but the unequal distribution of heat, which is the effect of the obliquity of the ecliptic, could have had no sensible influence on the formation of the rocks; this formation, on the contrary, must itself have had a powerful influence on the temperature of the Globe, and the surrounding air. When great masses of matter pass from a liquid to a solid state, this phenomenon cannot take place without being accompanied by an enormous evolution of caloric. These considerations seem to throw some light on the first migrations of animals and of plants. I might be tempted to explain by this progressive elevation of temperature several important problems, particularly that which the existence of the productions of the In-

dies buried in the countries of the north exhibits, were I not afraid of increasing the number of geological dreams.

The basalts of Regla, sketched on this plate, offer an undeniable proof of that identity of form, which is observed among the rocks of different climates. The mineralogical traveller, who casts a look over this drawing, finds in it the form of the basalts of the Vivarias, of the Euganean mountains, or of the promontory of Antrim in Ireland. The slightest circumstances observable in the columnar rocks of Europe are perceived in this group of the basalts of Mexico. So great an analogy of structure leads us to suppose, that the same causes have acted under every climate, and at very different epochs; for the basalts covered with thonschiefer and compact limestone must be of a very different age from those, that repose on strata of coal and pebbles.

The cascade of Regla is to the north-east of Mexico, at a distance of twenty-five leagues, between the celebrated mines of Real del Monte, and the thermal waters of Totonilco. A small river, which moves the wheel of the mill for amalgamation at Regla, the construction of which cost more than ten millions of livres, forces its way across the groups of basaltic columns; the sheet of water that rushes down is considerable, but the fall is not above

seven or eight metres. The surrounding rocks, which remind us of the cave of Fingal, at Staffa, in the Hebrides; the contrasts of vegetation, the wild appearance, and the solitude of the place, render this small cascade extremely picturesque. On both sides of the ravine the basaltic columns rise to more than thirty metres in height, and on them grow tufts of cactus and yucca filamentosa. The prisms have generally five or six sides, and are sometimes as much as twelve decimetres in breadth; several present very regular articulations. Each column has a cylindrical nucleus, of a denser mass than the surrounding parts; these nuclei are as it were enchased in the prisms, which in their horizontal fracture offer very remarkable convexities. This structure, which is also found in the basalts of Fairhead, I have shown in the foreground of the drawing toward the left.

The greater part of the columns of Regla are perpendicular; though some very near the cascade, have forty-five degrees of inclination toward the east; and farther on there are others horizontal. Each group, at the time of its formation, appears to have followed particular attractions. The mass of these basalts is very homogeneous. Mr. Bonpland remarked in them nuclei of olivine or granuliform peridot, surrounded with mesotype-zeolite. The prisms, and this fact deserves the attention of geologists,

repose on a bed of clay, under which is again found basalt. In general that of Regla is superposed on the porphyry of Real del Monte, while a floetz limestone serves as a basis to the basalt of Totonilco. The whole of this basaltic region is two thousand metres above the level of the ocean.

## RELIEF IN BASALT,

REPRESENTING THE

MEXICAN CALENDAR.

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PLATE XXIII.

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AMONG the number of monuments which seem to prove, that the people of Mexico, at the time of their conquest by the Spaniards, had attained a certain degree of civilization, we may assign the first rank to the calendars, or different divisions of time, adopted by the Toltecks and the Aztecks; either for the use of society in general, or to regulate the order of sacrifices, or to facilitate the calculations of astrology. This kind of monument is so much the more worthy of fixing our attention, as it is a proof of knowledge, which we have some difficulty in considering as the result of observations made by a nation of mountaineers, in the uncultivated regions of the New Continent. We might be tempted to compare the circumstance of the Azteck calendar,





*Mexican Calendar in Relief on Basalt.*



with that of those languages rich in words, and in grammatical forms, which we find among nations, whose actual mass of ideas is not correspondent to the multiplicity of signs adapted to explain them. Those languages so rich and flexible, those modes of intercalation which suppose an accurate knowledge of the duration of the astronomical year, are perhaps only the remains of an inheritance, transmitted to them by nations heretofore civilized, but since relapsed into barbarism.

The monks and other Spanish writers, who visited Mexico a short time after the conquest, gave but vague and often contradictory notions of the different calendars in use among the nations of the Tolteck and Azteck race. We find these notions in the works of Gomara, Valades, Acosta, and Torquemada. This last writer, notwithstanding his superstition, has transmitted to us in his *Monarquia Indiana*, a collection of important facts, which discovers an accurate knowledge of local circumstances. He lived fifty years among the Mexicans : he arrived at the city of Tenochtitlan at a period, when the natives were yet in possession of a great number of historical paintings ; and when, before the house of the Marquis del Valle \*, in the Plaza Mayor, were

\* See page 7, plate 3d, folio edition.

seen the remains of the great teocalli\* dedicated to the god Huitzilopochtli. Torquemada made use of the manuscripts of three Franciscan monks, Bernardino de Sahagun, Andrea de Olmos, and Toribio de Benavente, who were very intimately acquainted with the American languages, and who went to New-Spain in the time of Cortez, before the year 1528. Notwithstanding these advantages, the historian of Mexico has not furnished us with all the information respecting the chronology and calendars of the Mexicans, that we might have expected from his zeal and his instruction. He expresses himself with so little precision, that we read in his work, that the year of the Aztecks finished at the month of December, and began at the month of February †.

Materials more instructive than the narratives of the first Spanish historians, had long existed at Mexico, in the convents and public libraries. Some Indian authors, Christoval del Castillo, a native of Tezcuco, who died in 1606, at the age of eighty years, Fernando de Alvarado Tezozomoc, and Domingo Chimalpain, have left manuscripts composed in the Azteck language on the

\* The year 1577. Torquemada, lib. viii, c. 2. (vol. 2, p. 157.)

† Ibid. lib. 10, cap. 10, 33, 34, and 36.

history and chronology of their ancestors. These manuscripts, which contain a great number of dates, reckoning at the same time according to the Christian era, and according to the civil and ritual calendar of the natives, have been studied with advantage by the learned Carlos de Sigüenza, professor of mathematics at the university of Mexico; by the Milanese traveller, Boturini Benaducei; by the Abbé Clavigero; and latterly by Mr. Gama, whose astronomical labours I have had occasion to mention in another work\*. Finally, in 1790, a stone of enormous bulk, covered with characters evidently relative to the Mexican calendar, the religious festivals, and the days in which the Sun passes the zenith of the city of Mexico, was discovered in the foundations of the ancient teocalli. This served at the same time to clear up some doubtful points, and call the attention of some enlightened natives to the Mexican calendar.

I endeavoured, not only during my stay in America, but after my return to Europe, to study carefully every thing that has been published on the division of time, and the mode of intercalation among the Aztecks. I examined on the spot the celebrated stone found in the Plaza Mayor, and represented in the twenty-third

\* *Essai polit. sur le Mexique*, vol. 2, p. 24, de l'édition in 8vo.



plate: I have drawn some not uninteresting notions from the hieroglyphic paintings preserved in the convent of San Felipe Neri at Mexico: and I perused at Rome the manuscript commentary, which P. Fabrega composed on the Codex Mexicanus of Veletri: but I greatly regret, that I am not sufficiently versed in the Mexican language, to read the works written by the natives in their own tongue, and in the Roman alphabet, immediately after the taking of Tenochtitlan. Consequently I have not been able to verify the whole of the assertions of Siguenza, Boturini, Clavigero, and Gama, on the Mexican intercalation, by comparing them with the manuscripts of Chimalpain and of Tezozomoc, whence those authors assure us they derived the notions which they have published. Whatever be the doubts which remain on several points in the minds of the learned, habituated to scrutinize every fact, and adopt only what is rigorously proved, I am happy to have excited attention to a curious monument of Mexican sculpture, and to have given some new particulars respecting a calendar, which neither Robertson nor the illustrious author of the History of Astronomy appears to have treated with all the consideration it deserves. This calendar will be rendered still more interesting by the ideas we shall furnish relative to the Mexican tradition of the *four ages*, or four Suns, which exhibit

remarkable analogies with the *yougs* and the *calpas* of the Hindoos: and on the ingenious method employed by the Muysca Indians, a nation of mountaineers of New Grenada, to correct their lunar years by the intercalation of a thirty-seventh moon, called *deaf* or *cuhupqua*. It is by collecting and comparing the different systems of American chronology, that we can judge of the communications, which appear to have existed, in very remote times, between the nations of India and Tartary, and those of the New Continent.

The civil year of the Aztecks was a solar year of three hundred and sixty-five days, and was divided into eighteen months, each of twenty days. After these eighteen months, or three hundred and sixty days, five complementary days were added, and the year began anew. The names of *Tonalpohualli* or *Cempohualilhuittl*, which distinguished this civil calendar from the ritual calendar, sufficiently indicated its principal characters. The first of these names signifies *reckoning of the Sun*, in opposition to the ritual calendar, called *reckoning of the Moon*, or *Metzlapohualli*: the second denomination is derived from *cempohualli*, twenty, and *ilhuittl*, festival; and it alludes, either to the twenty days contained in each month, or the twenty solemn festivals celebrated during the course of a civil year, in the *teocallis*, or *houses of the gods*.

The beginning of the civil day among the Aztecks was reckoned like that of the Persians, the Egyptians\*, the Babylonians, and the greater part of the nations of Asia, except the Chinese, from sunrising. It was divided into eight intervals, a division found among the Hindoos † and the Romans; four of which were determined by the rising of the Sun, its setting, and its two passages across the meridian. The rising was called *yquiza tonatiuh*; noon, *nepantla tonatiuh*; the setting, *onaqui tonatiuh*; and midnight, *yohualnepantla*. The hieroglyphic of the day was a circle divided into four parts. Although, under the parallel of the city of Mexico, the length of the day does not vary more than two hours twenty-one minutes, it is very certain, that the Mexican hours were originally unequal, like the *planetary hours* of the Jews, and all those which the Greek astronomers noted under the name of *καιρῶν* in opposition to the *σημεριωναι equinoxial hours*.

The epochas of the day and the night which correspond nearly to our hours 3, 9, 15, and 21, astronomical time, had no particular names. The Mexicans, to denote them, pointed, as our labourers do, to the place of the sky where the

\* Ideler, Hist. Unters. ueber die astr. Beob. der Alten, p. 26.

† Bailly, Hist. l'Astr. anc. p. 296.

Sun would be in following its course from east to west ; this gesture was accompanied by these remarkable words : *iz Teotl, there God will be* ; an expression which recalls that happy period, when the people emigrated from Aztlan knew yet no other divinity than the Sun, and were addicted to no sanguinary rite\*.

Each Mexican month of twenty days was subdivided into four small periods of five days. At the beginning of these periods every commune kept its fair, *tianguiztli*. The Muyscas, a nation of South America, had weeks of three days. It appears, that no nation of the New Continent was acquainted with the week, or cycle of seven days, which we find among the Hindoos, the Chinese, the Assyrians, and the Egyptians, and which, as Le Gentil† has very justly observed, is followed by the greater part of the nations of the Old World.

A passage in the history of the Incas by Garcilasso, induced M. M. Bailly‡ and Lalande to think, that the Peruvians reckoned by cycles of seven days. “The Peruvians,” says Garcilasso, “reckon the months by the Moon ; they reckon the half months by the increas-

\* See above, p. 216.

† Le Gentil, *Hist. de l'Acad.* 1772, Tom. ii, p. 207, 209. La Place, *Expos. du Système du Monde*, p. 272.

‡ Bailly, *Hist. de l'Astron.* Liv. 5, § 17, p. 408. Lalande, *Astron.* § 1534.



ing and waning of the Moon ; they reckon the weeks by the quarters, without having particular names for the days of the week." But Acosta, better informed than Garcilasso ; and who, toward the end of the sixteenth century, composed at Peru the first books of his Physical Geography of the New Continent ; says clearly, that neither the Mexicans, nor the Peruvians, were acquainted with the small period of seven days ; " for this period," adds he, " does not depend more on the course of the Moon, than on that of the Sun. It owes its origin to the number of the planets\*."

If we reflect an instant on the system of the Peruvian calendar, we shall be aware, that, though the phases of the Moon change nearly every seven days, this cycle of seven days does not correspond with any accuracy to the phases of the Moon in several consecutive lunar months. The Peruvians, according to Polo, and all the writers of those times, had years (*huata*) of 365 days, regulated, as we shall see farther on, by solar observations made month after month at the city of Cuzco. The Peruvian year was divided, as were almost all the years of the nations of Eastern Asia, into twelve Moons, *quilla*, the synodical revolutions of which finished in 354 days,

\* Acosta, *Historia natural y moral de las Indias*. Lib. 6, C. 3; ed. of Barcelona, 1591, p. 260.



eight hours, forty-eight minutes. To correct the lunar year, and make it coincide with the solar year, eleven days, according to ancient custom, were added; which, by the edict of the Inca, were divided among the twelve moons. According to this arrangement, it was scarcely possible, that four equal periods, into which the lunar months should be divided, could be seven days each, and correspond to the phases of the Moon. The same historian, whose testimony is cited by M. Bailly in favor of the opinion, that the week of the Hindoos was known to the Americans, affirms, that, according to an ancient law of the Inca Pachacutec, there ought to be in each lunar month three days for festivals and for markets (*catu*); and that the people were to work, not seven, but eight consecutive days, and rest the ninth\*. This is undoubtedly a division of a lunar month, or a sidereal revolution of the Moon, into three small periods of nine days.

We shall observe, on this occasion, that the Japanese †, a nation of the Tartar race, are equally unacquainted with the small period of seven days; while it is in use among the Chinese, who seem also aborigines of the elevated plain of

\* Garcilasso, Lib. 6, C. 35, tom. 1, p. 216.

† Voyage de Thunberg au Japon, p. 317.

Tartary, but who have long had intimate communications with Hindostan \* and Thibet.

We have seen above, that the Mexican year presented, like that of the Egyptians and the *new French calendar*, the advantage of a division into months of equal duration. The five complementary days, the *epagomenes* *επαγομεναι* of the Egyptians, were denoted among the Mexicans by the name of *nemontemi* or *voids*. We shall see presently the origin of this denomination ; it is sufficient here to observe, that the children born during the five complementary days were regarded as unfortunate, and were called *nemoquichtli* or *nencihuatl*, *unhappy men or women* ; in order that, as is stated by the Mexican writers, these very names should call to their remembrance, in every event of life, how little they ought to trust to their stars.

Thirteen Mexican years formed a cycle, called *tlalpilli*, analogous to the indiction of the Romans. Four *tlalpilli* formed a period of 52 years, or *xiuhmolpilli*, *ligature* of the years ; finally, two of these periods of 52 years formed an old age, *cehuehuetiliztli*. To express myself more clearly, I shall call, with several Spanish writers, the *ligature* half a century, and *old age* a century.

\* Sir William Jones, in the *Asiatic Researches*, vol. 1, p. 420.

The hieroglyphic of the half century is conformable to the figurative signification of the word ; it is a bundle of reeds tied by a riband. A half century (*xiuhmolpilli*) was considered by the Mexicans as a *great year* ; and this denomination, no doubt, induced Gomara \*, to call the indications, or the four cycles of thirteen years, great weeks, *las semanas del anno*.

The idea of denoting a period by a word, which calls to mind a *bundle* of years or Moons, is found among the Peruvians. In the *Qquichua* language, *lingua del Inga*, a year of 365 days is called *huata* ; a word evidently derived from *huatani*, to tie, or *huatanan*, a rope of rushes. The Aztecks had no hieroglyphics for the *old age*, or century of 104 years, the name of which indicates, as we may say, the term of life of aged persons.

In resuming what we have just stated on the division of time, we find, that the Mexicans had small periods of five days (half decads), months of twenty days, civil years of 18 months, indications of 13 years, half centuries of 52 years, and centuries, or *old ages*, of 104 years.

According to the curious researches of Mr. Gama, it appears certain, that, at the close of a cycle of 52 years, the civil year of the Toltecks and the Aztecks, like that of the Chinese and the

\* Gomara, *Conquista de Mexico*, 1553, fol. 118.

Hindoos, finished at the winter solstice; "when," as the first missionary monks sent to Mexico with simplicity say, "the Sun, in his annual course, begins again his labours, *quando desanda lo andado*." This same beginning of the year is found among the Peruvians, whose calendar, in other respects, sufficiently indicates, that they are not descended from the Toltecks, as several writers have gratuitously supposed \*. The inhabitants of Cuzco preserved a tradition †, according to which the first day of the year corresponded formerly to our first of January, till the Inca Titu-Manco-Capac, who took the surname of Pachacutec (*reformer of time*), ordered, that, when the Sun trod back his steps, that is at the winter solstice, the year should begin.

A great confusion exists among the Spanish writers on the denomination and the series of the 18 Mexican months. Several of these months had three or four names; and some authors, forgetting that the Mexicans, when they had to represent a periodical series of signs, or hieroglyphics, wrote from right to left, and began at the bottom of the page, have taken the last month

\* See page 173, and my Essay on the primitive Population of America. Berlin. Monatschrift, 1806. Merz. p. 177, 208.

† Acosta, p. 260.

for the first. The Aztecks united in what they called *wheels* of the half century, *xiuhmolpilli*, the series of hieroglyphics, that denote the cycle of 52 years. A serpent, with its tail in its mouth, forming a circle, surrounds the wheel, and denotes, by four knots, the four indictions, or *tlalpilli*. This emblem reminds us of the serpent or dragon, which, among the Egyptians and the Persians \*, represents the century, a revolution, *ævum*. In this wheel of fifty-two years, the head of the serpent denotes the beginning of the cycle. It is not so with the *wheel of the year*; the serpent there does not encircle the 18 hieroglyphics of the months, and nothing in it characterizes the first month of the year.

The memoir which Mr. Gama published at Mexico on the Azteck almanack being very scarce in Europe, I shall insert here the series of the months, according to the laborious investigations of this distinguished writer. I shall add the etymology of the denominations, all of which relate to the festivals, public works, and the climate of Mexico. We cannot doubt, but that *Tititl* was the first month, the Indian Christoval del Castillo expressly stating in his manuscript history, that the *nemontemi*, or complementary

\* Bailly, p. 515.



days, were added at the end of the month *Atemoztli*. The following are the names of the 18 months.

1. *Tititl*, perhaps from *tititxia*, to glean after the harvest; *Itzcalli*, month destined to renew and whiten the insides of houses and temples. From the 9th to the 28th of January, in the first year of the first indiction of the cycle *Xiuhmolpilli*.

2. *Xochilhuítl*, from the 29th of January, to the 17th of February.

3. *Xilomanaliztli*; *Atlcahualco*, which wants water or rain; *Quahuitlehua*, month in which the trees begin to bud; *Cihuaílhuítl*, women's festival. From the 18th of February to the 9th of March.

4. *Tlacaxipehualiztli*; the name of this month calls to mind the horrible ceremony, in which human victims were flayed for their skins; which, when tanned, formed the priests garments, as we see in the hieroglyphic painting represented in plate 27; *Cohuaílhuítl*, festival of the snake. From the 9th to the 29th of March.

5. *Tozoztontli*, month of vigils, because the ministers of the temple were obliged to watch during the great festivals celebrated in this month. From the 30th of March to the 18th of April.

6. *Huey Tozoztli*, the grand vigil, the grand

penitence. From the 19th of April to the 8th of May.

7. *Toxcatl*, month in which cords and garlands of maize were tied around the necks of the idols; *Tepopochuiliztli*, a censer, from the 9th to the 28th of May. It was in this month, *Toxcatl*, that the fellow soldier of Cortez, Pedro de Alvarado, that ferocious warrior whom the Mexicans called the Sun, *Tonatiuh*, on account of his flaxen hair, made a horrible slaughter of the Mexican nobility assembled within the enclosure of the teocalli. This attack was the signal of the civil dissensions, that caused the death of the unfortunate Montezuma.

8. *Etzalqualiztli*, a name which appears to be derived from *etzalli*, a particular kind of food prepared with the flour of maize. From the 29th of May to the 17th of June.

9. *Tecuilhuitzintli*, month or festival of the young warriors. From the 18th of June to the 7th of July.

10. *Hueytecuilhuittl*, festival of the nobility and warriors advanced in years. From the 8th to the 27th of July.

11. *Miccailhuitzintli*, the little festival of the dead; *Tlaxochimaco*, distribution of flowers. From the 28th of July to the 16th of August.

12. *Hueymiccailhuittl*, the grand festival celebrated in remembrance of the dead; *Xocolhuetzi*, fall of fruit, month in which fruit ripens, corres-

ponding to the end of summer. From the 17th of August to the 5th of September.

13. *Ochpaniztli*, a besom, the month appointed for cleaning the canals, and repairing the dykes and roads; *Tenahuutiliztli*. From the 6th to the 25th of September.

14. *Pachtli*, name of a parasite plant, which begins to bud at this period on the trunks of old oaks; *Ezoztli*; *Teotleco*; come from the gods. From the 26th of September to the 15th of October.

15. *Hueypachtli*, month in which the plant *pachtli* has arrived at a certain size; *Tepeilhuitl*, festival of the mountains, or rather of the rural divinities who preside over the mountains. From the 16th of October to the 4th of November.

16. *Quecholli*, month in which the flamingo (phœnicopterus) a bird called by the Mexicans, on account of the beautiful colour of its plumage, *teoquechol*, the divine heron, arrives on the borders of the lake. From the 5th to the 24th of November.

17. *Panquetzaliztli*, from the name of the standard of the god *Huitzilopochtli*, carried in the processions, during the celebrated festival of *Teocualo*, or of *the god eaten by the faithful*, under the form of flour of maize kneaded with blood. From the 25th of November to the 14th of December.

18. *Atemoztli*, the descent of water and of snow; snow begins towards the end of December to cover the mountains, which surround the valley of Mexico. From the 15th of December to the 3d of January.

In the first year of the cycle, the five complementary days correspond to the 4th, 5th, 6th, 7th, and 8th of January. A nation, which makes no intercalation but every 52 years, finds the commencement of its year retrograde nearly a day every four years, and consequently, twelve or thirteen days at the end of the cycle, *xiuhmolpilli*. Hence it results, as we shall see farther on, that the last complementary day, or *nemontemi*, of the last year of the Mexican cycle, corresponds to the 26th of December. Now the five *nemontemi* being reckoned *vague* and *unlucky* days, the day of the winter solstice, or the 21st of December, was considered as the end of the *Xiuhmolpilli*. The *nemontemi*, or epagomenes, as well as the twelve or thirteen intercalary days, belong to neither of the two years between which they fall; and it is for this reason, that we have named the winter solstice the end, not the beginning, of a cycle of 52 years.

In the 3d, 4th and 5th months, which answer to our months of February, March, and April, solemn festivals were instituted in honor of *Tlalocteutli*, the god of water; this period being the time of the great droughts, which last in the

mountainous country till the month of June and July. If the priests had neglected the intercalation, the festivals in which the gods were invoked to grant a year abundant in rains would have gradually approached the time of the harvest: the people would have perceived, that the order of the sacrifices was inverted; and not having lunar months, they could not even, like the gods of Aristophanes \*, accuse the Moon of throwing their calendar and religious worship into confusion. As to the denominations and hieroglyphics of the Mexican months, nothing indicates, that they have taken birth in a more northerly climate. The word *quahuitlehua*, it is true, calls to mind, that the trees are clothed with young leaves toward the end of February; but this phenomenon, which is not observed in the low regions of the torrid zone, is suitable to the mountainous region, situate between the 19th and 24th degrees of latitude, where the oaks, without shedding entirely their old leaves, begin to bud forth anew.

We have hitherto spoken of the civil calendar called the *Sun's reckoning*, *Tonalpohualli*; we shall now examine the ritual calendar, denoted by the names of the *reckoning of the Moon*, *Metzlopohualli*, and the *reckoning of the festivals*, *Cemilhuitlelapohualiztli*, from *tlapohualiztli*, reck-

\* Aristoph. *Nubes*, v. 615.



oning, and *illuitti*, festival. This last calendar, the only one employed by the priests, and of which we find traces in almost all the hieroglyphical paintings preserved to our own times, presents a uniform series of small periods of 23 days. These small periods may be considered as *half lunations*; they probably took their origin from the two states of watching, *ixtozolitli*, and sleep, *cochiliztli*, which the Mexicans attributed to the Moon; according as this luminary lights the greater part of the night, or, appearing only by day on the horizon, seems, according to the popular opinion, to repose in the night. This relation, observed between the periods of thirteen days, and the half of the time that the Moon is visible, before and after her opposition, has undoubtedly given to the ritual calendar the name of the *reckoning of the Moon*; but this denomination ought not to induce us to look for a lunar year in the series of the small cycles, which follow uniformly, and which have nothing common either with the phases or the revolutions of the Moon.

The number 13 by its multiples affords proportions, which the Mexicans made use of to preserve an agreement between the ritual and civil almanacks. A civil year of 365 days contains a day more than twenty-eight small periods of 13 days; now the cycle of 52 years being divided into four *tlalpilli* of 13 years, this

supernumerary day forms at the end of each indication a small entire period, and a *tlalpilli* contains three hundred and sixty-five of these periods: that is, as many weeks of thirteen days, as the year has civil days. A year of the ritual almanack has twenty *half lunations*, or two hundred and sixty days, and this same number of days contains fifty-two half decades, or small periods of five days; the Mexicans then found, in the concordance of these two reckonings of the Moon and the Sun, their favourite numbers of five, thirteen, twenty, and fifty-two. A cycle of fifty-two years contained one thousand four hundred and sixty small periods of thirteen days; and, if to these we add thirteen intercalary days, we shall have one thousand four hundred and sixty-one small periods; a number which accidentally coincides with that of the years constituting the Sothiac period.

The cycle of nineteen solar years, which corresponds to two hundred and thirty-five lunations, and which the Chinese knew more than sixteen centuries before Meton \*, finds its multiple neither in the cycle of sixty years, which is in use among the greater part of the nations of eastern Asia, and among the Muyscas of the elevated plain of Bogota; nor in the cycle of fifty-two years, adopted by all the nations of the

\* La Place, Expos. tom. 2, p. 267.

Tolteck, Acolhuan, Azteck, and Tlascalteck race. It is true, that five *old ages* of one hundred and four years each, form, within a year nearly, the Julian period; and that the double of the period of Meton is almost equal to three indictions (*tlalpilli*) of the Mexican year; but no multiple of thirteen is exactly equal to the number of days contained in a period of two hundred and thirty-five lunations. The period of Meton contains five hundred and thirty-three small cycles and a half of thirteen days, while that of Calippus contains two thousand one hundred and thirty-four and one thirteenth. The knowledge of these periods was useful to the nations of Asia, who, as well as the Peruvians, the Muyscas, and the other tribes of South America, had lunar years: but it must have been absolutely indifferent to the Mexicans, the pretended reckoning of the Moon (*metzlapohualli*) being only an arbitrary division of a great period of thirteen astronomical years into three hundred and sixty-five small periods of thirteen days, each of which has perceptibly the same duration as the sleep or vigil of the Moon.

The Mexicans were in possession of annals, that went back to eight centuries and a half beyond the epocha of the arrival of Cortez in the country of Anahuac. We have already explained how these annals presented, in their sub-

divisions, sometimes a cycle of fifty-two years, at others a *tlalpilli* of thirteen years, and at others a single year of two hundred and sixty days, contained in twenty small periods of thirteen days, according as the history was more or less minute. Along with the periodical series of the hieroglyphics of the years and the days, the migrations of the nations, their battles, and the events which had rendered the reign of each king illustrious, were represented in paintings brilliant in colouring, hideous from the form and the extreme imperfection of the drawing, but often natural in the composition. It could not be denied, but that Valades, Acosta, Torquemada, and in these latter times Siguenza, Boturini, and Gama, have gained information from paintings which went back as far as the seventh century. I have had in my own hands paintings, in which the migrations of the Toltecks were recognised; but I doubt whether the first Spanish conquerors found, as Gomara asserts, annals that traced events, *year by year*, through eight centuries. The Toltecks had disappeared four hundred and sixty-five years before the arrival of Cortez; the nation which the Spaniards found settled in the valley of Mexico was of the Azteck race: what he knew of the Toltecks he could have learnt only from paintings, which they had left in the country of Anahuac; or from



some dispersed families, who, restrained by the love of their native soil, had not thought proper to share the chances of the emigration.

The annals of the Aztecks begin, according to Gama, at an epocha corresponding to the year 1091 of our era; a period at which, by order of their chief Chalchiuhtlatonac, they celebrated the festival of the renewal of the fire at Tlalixco, called also Acahualtzinco, situate probably under the parallel of thirty-three or thirty-five north latitude. It is only since the year 1091, in which as the Indian historian Chimalpain expressly says, they *tied* for the first time the years after their going forth from Aztlan, that Mexican history presents the greatest order, and an astonishing minuteness in the recital of events.

Conformably to what we have hitherto stated of the *reckoning of the Sun*, and the uniform division of the year into eighteen months of equal duration, it would have been easy for the Mexicans, to denote the periods of historical events by recording the day of the month, and reckoning the number of years which had passed since the famous sacrifice of Tlalixco. This simple and natural method would without doubt have been followed, if the annals of the empire had not been kept by the priests, *teopixqui*. We sometimes find, it is true, the hieroglyphic of a month, to which are added round points, placed in two unequal rows, proving by their disposi-



tion, that the Azteck priests, as we have already observed, followed the different terms of a series from *right* to left, and not from *left* to right, as the Hindoos, and almost all the nations that now inhabit Europe. We still see at Mexico the copy of a painting, formerly in the museum of the Chevalier Boturini, in which the sign of the month *quecholli*, followed by thirteen points, is placed near a Spanish spearman, whose horse has under his feet the hieroglyphic of the city of Tenochtitlan. This painting no doubt represents the first entry of the Spaniards into Mexico, on the thirteenth of the month *quecholli*, which, according to Gama, corresponds to the 17th of November, 1519; but we must confess, that simple dates, expressed by the month and the number of the days passed, was very rarely found in the Mexican annals.

With respect to the years, those of the same cycle of fifty-two years were never distinguished by numbers. In order not to confound them, however, they made use of a particular contrivance, which we shall describe farther on; and which is so much the more curious, as it offers points of resemblance between the chronological system of the Mexicans, and that of the people of Asia. The *rounds* or signs of numbers are found added only to the *ligatures*, which indicate cycles of fifty-two years. Thus the hieroglyphic of the *Xiuhmolpilli*, followed by four rounds, placed

near islets, on which the temple of Mexitli was built, reminded the Mexicans, that his ancestors had *tied* the years four times ; or that, since the sacrifice of Tlalixco, four times fifty-two years had passed away, when the city of Tenochtitlan was founded on the lake of Tezcucó. These rounds consequently indicated, that this remarkable event had taken place after the year 1299, and before the year 1351. Let us now examine the ingenious but very complicated methods, of which these people made use to denote the year and the day of a cycle of fifty-two years.

This method, as we shall presently explain, is identic with that made use of by the Hindoos, the Thibetans, the Chinese, the Japanese, and the Asiatic people of the Tartar race ; who also distinguished the months and the years by the correspondence of several periodical series \*, the number of the terms of which is not the same. The Mexicans employ, for the cycle of years, the four following signs, which have the names of

<i>Tochtli</i>	- -	a rabbit or hare,
<i>Acatl</i>	- -	a cane,
<i>Tecpatl</i>	- -	a flint, or silex,
<i>Calli</i>	- -	a house.

We find these four hieroglyphics in several of the preceding plates. For the figure of the rab-

\* Series Periodiques.

bit (*tochtli*) - see, in plate 13, the animal with large ears figured in the eighth compartment, reckoning from the bottom on the right; plate 23, the third compartment at the bottom on the left; and more especially plate 27, No. 1, the eighth compartment. For cane (*acatl*), flint (*tecpatl*), and house (*calli*), see, on the circular stone represented plate 23, the fifth, tenth, and fifteenth compartments, which follow that of the rabbit, from left to right. We shall easily recognise the same forms in plate 27, No. 1, in the compartments thirteen, eighteen, and three, reckoning in the same row from right to left, and beginning with the lower row. The sign of flint is also seen in plate 13, behind the figure in the attitude of adoration. On this same plate the *calli* is represented by the entire figure of a house, in which are seen the door, and a very elevated roof.

Let us at present imagine the cycle, or the *half old age*, divided into four *tlalpilli*, each of thirteen years; and the four signs rabbit, cane, flint, and house, added in a periodical series to the fifty-two years contained in a cycle, we shall find, that two indictions cannot begin by the same sign; that the sign placed at the head of an indiction must necessarily terminate it, and that the same sign cannot belong to the same number. The following is the table of the Mexican cycle, called *ligature* or *xiuhmolpilli*.

FIRST TLALPILLI.		SECOND TLALPILLI.		THIRD TLALPILLI.		FOURTH TLALPILLI.	
Ce Tochtl.	1. Rabbit.	Ce Acatl.	1. Cane.	Ce Tecpatl.	1. Flint.	Ce Calli.	1. House.
Omec Acatl.	2. Cane.	Omec Tecpatl.	2. Flint.	Omec Calli.	2. House.	Omec Tochtl.	2. Rabbit.
Jei Tecpatl.	3. Flint.	Jei Calli.	3. House.	Jei Tochtl.	3. Rabbit.	Jei Acatl.	3. Cane.
Nahui Calli.	4. House.	Nahui Tochtl.	4. Rabbit.	Nahui Acatl.	4. Cane.	Nahui Tecpatl.	4. Flint.
Macuilli Tochtl.	5. Rabbit.	Macuilli Acatl.	5. Cane.	Macuilli Tecpatl.	5. Flint.	Macuilli Calli.	5. House.
Chicuace Acatl.	6. Cane.	Chicuace Tecpatl.	6. Flint.	Chicuace Calli.	6. House.	Chicuace Tochtl.	6. Rabbit.
Chicome Tecpatl.	7. Flint.	Chicome Calli.	7. House.	Chicome Tochtl.	7. Rabbit.	Chicome Acatl.	7. Cane.
Chicuei Calli.	8. House.	Chicuei Tochtl.	8. Rabbit.	Chicuei Acatl.	8. Cane.	Chicuei Tecpatl.	8. Flint.
Chicuhnahui Tochtl.	9. Rabbit.	Chicuhnahui Acatl.	9. Cane.	Chicuhnahui Tecpatl.	9. Flint.	Chicuhnahui Calli.	9. House.
Matlactli Acatl.	10. Cane.	Matlactli Tecpatl.	10. Flint.	Matlactli Calli.	10. House.	Matlactli Tochtl.	10. Rabbit.
Matlact. ozce Tecpatl.	11. Flint.	Matlactli ozce Calli.	11. House.	Matl. ozce Tochtl.	11. Rabbit.	Matlactli ozce Acatl.	11. Cane.
Matlact. omome Calli.	12. House.	Matl. omome Tochtl.	12. Rabbit.	Matl. omome Acatl.	12. Cane.	Matl. omome Tecpatl.	12. Flint.
Matl. omey Tochtl.	13. Rabbit.	Matlactli omey Acatl.	13. Cane.	Matl. omey Tecpatl.	13. Flint.	Matlactli omey Calli.	13. House.

The words *ce*, *ome*, *jei*, placed before the names of the four hieroglyphics of the years, indicate the numbers, the series of which does not pass thirteen, and which are consequently repeated four times in a ligature. The following table exhibits the numbers from one to thirteen, in the Mexican or Azteck, Nootka, Muysca or Mosca, Peruvian or Qquichua, Mantchou, Oigour, and Mongul languages.



AMERICAN LANGUAGES.				TARTARIAN LANGUAGES.		
AZTECK. (Mexico.)	QUICHUA. (Peru.)	MUYSCA. (New Granada.)	NOOTKA. (North West Coast.)	MAN'TCHOU. (Eastern Tartary.)	MONGUL. (Western Tartary.)	OIGOUR. (Elevated Plain of Turfan.)
1. Ce.	Huc.	Ata.	Sahuac.	Emou.	Neguè.	Pir.
2. Ome.	Iscay.	Bosa.	Atla.	Tchoué.	Khour.	Iki.
3. Jci.	Quimza.	Mica.	Caiza.	Ilan.	Gourbâ.	Outche.
4. Nahui.	Tawa.	Muyhica.	Nu.	Touyin.	Durba.	Tourou.
5. Macuilli.	Pichea.	Hisca.	Sutcha.	Sountcha.	Taboù.	Pich.
6. Chicnacé.	Zocta.	Ta.	Nupu.	Ningoun.	Djourgâ.	Alti.
7. Chicome.	Canchis.	Cuhupqua.	Atlipu.	Nadan.	Dolo.	Iti.
8. Chicici.	Pussac.	Suhuza.	Altual.	Tchakoun.	Najma.	Sakis.
9. Chicuhnahui.	Yscon.	Aca.	Tzahuacuati.	Ouyoun.	Youzou.	Toukous.
10. Matlactli.	Chunca.	Ubelica.	Ayo.	Tchouan.	Arban.	Oun.
11. Matlactli ozce.	Chunca huenioc.	Quicha ata.	Ayo sahuac.	Tchouan emou.	Arban neguè.	Pir ouu.
12. Matlactli onome.	Chunca iscayoc.	Quicha bosa.	Ayo atla.	Tchouan tchoué.	Arban khour.	Iki ouu.
13. Matlactli oney.	Chunca quimzayoc.	Quicha mica.	Ayo catza.	Tchouan ilan.	Arban gourbâ.	Outche ouu.

We may be struck with the extreme difference in the seven languages, in which we have just given the cardinal numbers. The American languages are as distinct from each other, as they are from the Tartar tongues. This want of analogy ought not, however, to be alleged as a proof against the opinion, that the American nations have had ancient communications with eastern Asia. The different groups of Tartarian nations vary as much in this respect. The Oigours, who, two ages before our era, emigrated from the banks of the Selinga toward the elevated plain of Turfan, in the latitude of  $43^{\circ} 30'$ , speak a language differing more from that of the Mantchous, than the German from the Latin. When tribes of the same origin are separated during a long series of ages, by seas and vast deserts, their idioms preserve but a very small number of roots and forms, that are common to each other.

In the same manner as the Mexicans, speaking of the year of a cycle, placed the cardinal numbers *ce*, *ome*, *jei*, before the names of the four hieroglyphics rabbit, cane, flint, and house, they joined in their paintings the signs of these numbers to the signs of the years. The mode was the same as that employed to distinguish the cycles or *ligatures*. As the periodical series of the numbers had only thirteen terms, it was

sufficient to add to the hieroglyphic the *rounds* denoting the units.

The symbolical writing of the Mexican nations exhibited simple signs equally for twenty, and for the second and third powers of the same number, which recalls to mind that of the fingers and toes of the hands and the feet. A small standard, or flag, represented twenty units; the square of twenty, or four hundred, was figured by a *feather*, because grains of gold, enclosed in a quill, were used in some places as money, or a sign for the purposes of exchange. The figure of a *sack* indicated the cube of twenty, or eight thousand, and bore the name of *xiquipilli*, given also to a kind of purse that contained eight thousand grains of cacao. A standard divided by two cross lines, and half coloured, indicated half twenty, or ten. If the standard was three quarters coloured, it denoted fifteen units or three fourths of twenty. In reckoning, the Mexican did not name the multiples of ten, which the Arabians called *knots*, but the multiples of twenty. He said one twenty, *cem-pohualli*, two twenties, *om-pohualli*, three twenties, *yei-pohualli*, and four twenties, *nahui-pohualli*. The last expression is the same with that employed in French \*. It is almost superfluous to observe, that the Mexicans were unacquainted

\* Quatre-vingt.

with the method of giving to the signs of the numbers the *values of position* \* ; that admirable method invented either by the Hindoos, or by the Thibetans †, but unknown alike to the Greeks ‡, the Romans, and the civilized nations of Western Asia. The Mexicans joined their hieroglyphics of the numbers nearly in the same manner as the Romans repeated the letters of their alphabet, which served them as ciphers. We should not be surprised to see, that the Mexican arithmetic does not present a simple hieroglyphic for hundreds above four hundred, when we recollect ||, that the Arabians, till the fifth age of the hegira, knew as little of signs for the enumeration of the hundreds above four hundred ; and that, to write nine hundred, this people, justly celebrated in the annals of the sciences, were obliged to place twice the sign of four hundred by the side of the sign of one hundred.

From what we have observed respecting the manner of distinguishing the *ligatures* from each other, and the years contained in a *ligature*, it follows, that a period was determined, by naming at once the number of the *ligatures*, or cycles,

\* La Place, Expos., tom. 2, p. 276.

† Georgii Alph. Tibet., c. 23, p. 637.

‡ Delambre, sur les fonds et les analogues des Grecs. (Oeuvres d'Archimède, par Peyrard, p. 575.)

|| Sylvestre de Sacy, Gramm. Arab., 1810, P. 1, p. 74.

and two corresponding terms in the two periodical series of thirteen numbers and four signs. The following table presents several remarkable epochas of the Mexican history, indicated according to the era of the Aztecks. We should recollect, that these nations reckoned the number of their cycles, or *xuihmolpillis*, only from the year 1091 ; because, in their annals, they had established a new chronological order after their departure from Aztlan, or from the beginning of their migrations towards the south.



TABLE.

Nahui Xiuhmolphilli, ome Calli (4 <sup>th</sup> Cycle, 2 House) . . . .	1325. Foundation of Tenochtitlan.
Macuilli Xiuhmolphilli, ce Calli (5 <sup>th</sup> Cycle, 1 House) . . . .	1389. Accession of King Huitzilhuhtl.
Chieuace Xiuhmolphilli, chieuace Tochtli (6 <sup>th</sup> Cycle, 6 Rabbit) . .	1446. Great inundation of the city of Mexico.
Chicome Xiuhmolphilli, matlactli omeý Tochtli (7 <sup>th</sup> Cycle, 13 Rabbit)	1492. Arrival of Columbus in the West Indies.
Chicuei Xiuhmolphilli, ce Acatl (8 <sup>th</sup> Cycle, 1 Cane) . . . .	1519. Entrance of Cortez into Tenochtitlan.
Chicuei Xiuhmolphilli, ome Tecpatl (8 <sup>th</sup> Cycle, 2 Flint) . . . .	1520. Death of Montezuma.
Chicuei Xiuhmolphilli, jei Calli (8 <sup>th</sup> Cycle, 3 House) . . . .	1521. Taking and Destruction of Tenochtitlan.

The same contrivance of the concordance of two periodical series was employed to distinguish the days of the same year. It appears, that originally among the Mexican nations, as well as among the Persians, each day of the month had a name, and a particular sign; these twenty signs recall to mind the *yogas*, which, in the astrological almanack of the Hindoos, we find added to the twenty-eight days of the lunar month. In the *Metztlapohualli*, or *reckoning of the Moon* of the Aztecks, they were distributed among the small cycles of the half-lunations; so that a periodical series of thirteen terms, which were all ciphers, corresponded to a periodical series of twenty terms, which contained only hieroglyphical signs. It is in this series of days, that we find the four grand signs, rabbit, cane, flint, and house, by which, as we have just seen, the years of a cycle were denoted; sixteen other signs of an inferior order were so distributed, that in an equal number of four they separated the grand signs one from the other.

Recollecting, that each Mexican month was divided into four small periods of five days, we may conceive, that originally the hieroglyphics rabbit, cane, flint, and house, indicated the beginning of these small periods in the years, the first day of which bore one of the four signs above named. In fact, when the first of the

month *tititl* has the sign *calli*, the sixth of all the following months will be *tochtli*, the eleventh *acatl*, and the sixteenth *tecpatl*: each month will begin as it were by a Sunday, and these Sundays will fall during the whole year on the same days of the months. The Mexicans paid particular regard to the events, that happened on one of the four days which had the hieroglyphics of the cycle of the years. We find traces of this superstition among the Persians; who, in order to give a sign (*karkunan*) to each day of the month, added to the twelve *celestial spirits*, who presided over the months, eighteen ministers of an inferior order. The Mexicans considered those days as lucky, which bore the sign of the year. The Persians \* distinguished the days governed by the same angel, that presided over the whole month.

As most of the hieroglyphic paintings represented in the plates accompanying this work relate to the sacrifices, which were to be made in each period of thirteen days, we find the figures of the twenty signs of the days several times repeated. I shall here mention only the plates 13, 23, and 27. The following are the names of these signs:

\* Langles, sur le Calendrier Persan, dans Chardin, Voyage à Ispahan, vol. 2; p. 265.

CALLI . . .	a house.
Cuetzpalin . .	a lizard.
Cohuatl . . .	a snake. This word is found in <i>Cihuacohuatl</i> *, <i>serpent</i> <i>woman</i> , the Eve of the Mexi- cans.
Miquiztli . .	death, a death's head.
Mazatl . . .	a buck, or stag.
TOCHTLI . . .	a rabbit.
Atl . . . .	water.
Itzcuintli . .	a dog.
Ozomatli . . .	an ape.
Malinalli . .	grass.
ACATL . . . .	a cane.
Ocelotl . . . .	a tiger, or jaguar.
Quauhtli . . .	an eagle.
Cozcaquauhtli	king of the vultures.
Ollin . . . .	annual course of the Sun.
TECPATL . . .	flint.
Quiahuitl . .	rain.
Xochitl . . . .	a flower.
Cipactli . . . .	a sea animal. <i>Teocipactli</i> , fish-divinity, is one of the names, which the Mexicans gave <i>Coxcox</i> , who is the Noah of the people of the Semetic race.
Ehecatl . . . .	wind.

\* See above, p. 195.

The numbers thirteen and twenty having no common factors in the almanack of half-lunations, the two periodical series cannot twice correspond to the same terms, till after thirteen multiplied by twenty, or two hundred and sixty days. In a year, the first day of which has the sign *cipactli*, there is no half-lunation, that begins with the sign *cipactli*, in the first thirteen months; but after the month *pachtli*, the same signs return with the same ciphers. To avoid this cause of error, the Mexicans, faithful to their principles of not naming the number of small periods of thirteen days, had again recourse to the contrivance of periodical series. They formed a third series of nine signs, called the *lords* or *masters of the night*, namely,

<i>Xiuhteucli tletl</i>	.	.	.	fire, or master of the year.
<i>Tecpatl</i>	.	.	.	flint.
<i>Xochitl</i>	.	.	.	a flower.
<i>Cinteotl</i>	.	.	.	the goddess of maize.
<i>Miquixtli</i>	.	.	.	death.
<i>Atl</i>	.	.	.	water.
<i>Tlazolteotl</i>	.	.	.	the goddess of love.
<i>Tepeyollotli</i>	.	.	.	a spirit that inhabits the interior of mountains.
<i>Quiahuitl</i>	.	.	.	rain.

We may be astonished at finding a series of nine terms in a calendar, that makes use only of



the numbers 5, 13, 18, 20, and 52; we may even be tempted to look for some analogy between the nine *lords of the night* of the Mexicans, and the nine astrological signs of several nations of Asia, who join to the seven visible planets two invisible dragons, to which they attribute eclipses : but without doubt it is only the facility, with which the nine *lords of the night* divide themselves forty times into three hundred and sixty days, that has given the preference to the number nine.

The five complementary days, called by the Persians *furtive*, or *pendjehidouzdideh*, bear, among the Mexicans, the name of *nemontemi*, or *void*, because they do not add to them those terms of the third series, which the Indian authors consider as the *companions* of the signs of the days. We should observe, and this circumstance may become embarrassing in the Azteck chronology, that five of these *companions* bear the same name as the hieroglyphics of the day : but, according to the reveries of the American astrologers, the *spirits* that belong to the series of the nine signs govern the night, while the other twenty signs govern the day. The Hindoos were acquainted also with genii (*caranas*) presiding over half a lunar day (*tīthi*).

As there are twenty signs of the day, and nine *companions* or *lords of the night*, the same companion must correspond, every nine multiplied by

twenty, or one hundred and eighty days, to the same hieroglyphics ; but it is impossible, that, in the same year of three hundred and sixty-five days, the same term of three series, namely, the *number*, the *sign of the day*, and the *companion*, or nocturnal spirit, can coincide more than once. In a year which begins by *Cipactli*,

The 11th of January.....will be...3d Calli, Xochitl.

The 10th of July.....will be...1st Calli, Xochitl.

The 2d of February.....will be...12th Cohautl, Tlazolteotl.

The 1st of August.....will be...10th Cohuatl, Tlazolteotl.

The 18th of May.....will be... 3d Xochitl, Xochitl.

The 5th of November...will be ...1st Xochitl, Xochitl.

The employment of the third periodical series, by means of which two days, that have the same number and the same hieroglyphic, are distinguished ; for instance, 1 *Cipactli*, corresponding to the 9th of January and the 26th of September, was unknown to the greater part of the Spanish historians. It was discovered by Mr. Gama, from the Mexican manuscripts of the Indian Christoval del Castillo. In order to denote a day, according to the complicated method of the Mexicans, we should say, a fourth of a month, which is at the same time a *Wednesday* of the Gregorian, and a *quintidi* of the French republican calendar. This expression would indicate the coincidence of certain terms

of three periodical series ; namely, of the thirty or thirty-one days of the month, of the seven days of the week, and of the ten days of the decade. To dissipate entirely every doubt, that may remain respecting the chronological system of the Mexicans, we shall here add a table, which unites the divisions of the ritual and civil calendars, and their correspondence with the Gregorian calendar.

TABLE.

METZLAPOHUALLI, RITUAL AND ASTROLOGICAL CALENDAR.				TONALPOHUALLI, CIVIL CALENDAR. MEXICAN MONTHS. DIVIDED INTO PERIODS OF 5 DAYS.		CORRESPONDENCE WITH THE <i>Gregorian Calendar</i> , FOR THE YEAR 1091.	
SMALL PERIODS OF 13 DAYS.	PERIODICAL SERIES.			TITITL.		JANUARY.	
	SERIES of the 13 NUMBERS.	SERIES of the 20 SIGNS OF THE DAYS.	SERIES of the 9 LORDS OF THE NIGHT.				
FIRST HALF LUNATION.	1	Cipactli .....	<i>Tletl</i> .....	1	TITITL.	9	JANUARY.
	2	Ehecatl .....	Tecpatl .....	2		10	
	3	<i>Calli</i> .....	Xochitl .....	3		11	
	4	Cuctzpalin .....	Cinteotl .....	4		12	
	5	Cohuatl .....	Miquiztli .....	5		13	
	6	Miquiztli .....	Atl .....	6		14	
	7	Mazatl .....	Tlazolteotl .....	7		15	
	8	<i>Tochtli</i> .....	Tepeyollotli .....	8		16	
	9	Atl .....	Quiahuitl .....	9		17	
	10	Itzcuintli .....	<i>Tletl</i> .....	10		18	
	11	Ozomatli .....	Tecpatl .....	11		19	
	12	Malinalli .....	Xochitl .....	12		20	
	13	<i>Acatl</i> .....	Cinteotl .....	13		21	
SECOND HALF LUNATION.	1	Ocelotl .....	Miquiztli .....	14	TITITL.	22	JANUARY.
	2	Quauhiti .....	Atl .....	15		23	
	3	Cozcaquauhiti .....	Tlazolteotli .....	16		24	
	4	Ollin .....	Tepeyollotli .....	17		25	
	5	<i>Tecpatl</i> .....	Quiahuitl .....	18		26	
	6	Quiahuitl .....	<i>Tletl</i> .....	19		27	
	7	Xochitl .....	Tecpatl .....	20		28	
	8	Cipactli .....	Xochitl .....	1		29	
	9	Ehecatl .....	Cinteotl .....	2		30	
	10	<i>Calli</i> .....	Miquiztli .....	3		31	
	11	Quetzpalin .....	Atl .....	4			
	12	Cohuatl .....	Tlazolteotl .....	5			
	13	Miquiztli .....	Tepeyollotli .....	6			
	1	Mazatl .....	Quiahuitl .....	7	TITITL.	1	FEBRUARY.
	2	<i>Tochtli</i> .....	<i>Tletl</i> .....	8		2	
	3	Atl .....	Tecpatl .....	9		3	
	4	Itzcuintli .....	Xochitl .....	10		4	
	5	Ozomatli .....	Cinteotl .....	11		5	
				12		6	
				13		7	

It would be useless to extend this table beyond the first thirty-one days of the Mexican year; but we will here observe, that the Indians of Chiapa, who employed the same divisions of time, and the same contrivance of the periodical series, gave the hieroglyphics of the days contained in a month the name of twenty illustrious warriors, who in the remotest times had conducted the first colonists to the mountains of Teochiapan. Among these signs of the days, (*kárkunán* of the Persians,) the Chiapanese distinguished, like the Aztecks, four great, and sixteen little signs. The first began the periods of five days; but for the names of house, rabbit, cane, and flint, (*calli*, *tochtli*, *acatl*, and *tecpatl*,) the Chiapanese had substituted those of *Votan*, *Lambat*, *Been*, and *Chinar*; four chiefs celebrated in their historical annals.

We have already fixed the attention of our readers on this *Votan*, or *Wodan*, an American, who seems to be a member of the same family with the *Wods*, or *Odins*, of the Goths, and nations of Celtic origin. As Odin and Boudha, according to the learned researches of Sir William Jones, are probably one and the same person\*, it is curious to see the names of *Boudvar*, *Wodans-dag*, (Wednes-day), and *Votan*, denote in India, in Scandinavia, and Mexico, a

\* *Asiat. Res.* vol. 1, p. 511; vol. 2, p. 343.



day of a small period. According to the ancient traditions, collected by the Bishop Francis Nunnez de la Vega, "the Wodan of the Chiapanese was grandson of that illustrious old man, who, at the time of the great deluge, in which the greater part of the human race perished, was saved on a raft, together with his family." Wodan co-operated in the construction of the great edifice, which had been undertaken by men to reach the skies; the execution of this rash project was interrupted; each family received from that time a different language, and the great spirit, *Teotl*, ordered Wodan, to go and people the country of Anahuac. This American tradition reminds us of the Menou of the Hindoos, the Noah of the Hebrews, and the dispersion of the Couschites of Singar [the Cushites of Shinar]. Comparing this tradition either with those of the Hebrews and Indians preserved in Genesis and the two sacred Pouranas\*, or with the fable of Xelhua the Cholulain†, and other facts cited in the course of this work, it is impossible to avoid being struck with the analogy, which exists between the old memoirs of the people of Asia, and those of the New Continent.

We shall here prove, as we have just asserted,

\* L. c. vol. 3, p. 486.

† See above, p. 96.

that this analogy is particularly manifest in the division of time, in the use of periodical series, and in the ingenious, though complex and embarrassing method, of denoting a day or a year, not by ciphers, but by astrological signs. The Toltecks, the Aztecks, the Chiapanese, and other nations of American race, reckoned by cycles of fifty-two years, divided into four periods of thirteen years ; the Chinese, the Japanese, the Calmucks, the Moghols, the Mantchous, and other Tartar hordes, have cycles of sixty years, divided into five small periods of twelve years. The nations of Asia, like those of America, have particular names for the years contained in a cycle ; it is still said at Lassa, and at Nangasacki, as formerly in Mexico, that such or such an event took place in the year of the *rabbit*, the *tiger*, or the *dog*. None of these nations has as many names as there are years in the cycle ; all consequently must have recourse to the contrivance of the correspondence of periodical series. Among the Mexicans, these series are of thirteen numbers and four hieroglyphical signs ; among the nations of Asia, whom we have just named, the series do not contain numbers, they are formed only of signs corresponding to the twelve constellations of the zodiac, and the names of the elements, which afford ten terms, because each element is con-

sidered as male and female. The character of these methods is the same in the chronology of the Americans as in that of the Asiatics: if we cast our eyes over the table of the years, which we have sketched some pages back \*, we shall see, that the mode adopted by the Mexicans is even less complicated. The Japanese, to denote the period of the accession of a Dairi, do not say, that it was in the year *ouma* (horse) of the second period of twelve years: they call the nineteenth year of the cycle, the year *male water* (horse), placed between the years *female water* (sheep) and *female metal* (serpent). To have a clear idea of these periodical series of the Japanese calendar, we should recollect, that this nation, like the people of Thibet, reckon five elements; namely, wood (*keno*), fire (*fino*), earth (*tsutsno*), metal, or lead (*kanno*), and water (*midsno*). Each element is male or female, according as the syllable *je* or *to* is added, a distinction which was also in use among the Egyptians †. In order to distinguish the sixty years of the cycle, the Japanese combine the ten elements, or terrestrial principles, with the twelve signs of the zodiac, called the celestial principles. We shall give here only the

\* See p. 310.

† Seneca, *Quæst. Nat. lib. 3, c. 14.*

first two indictions contained in the Japanese cycle \*.

TABLE.

1. <i>Kino je ne</i> (rat).	13. <i>Fino je ne.</i>
2. <i>Kino to us</i> (ox).	14. <i>Fino to us.</i>
3. <i>Fino je torra</i> (tiger).	15. <i>Tsutsno je torra.</i>
4. <i>Fino to ov</i> (hare).	16. <i>Tsutsno to ov.</i>
5. <i>Tsutsno je tats</i> (crocodile or dragon).	17. <i>Kanno je tats.</i>
6. <i>Tsutsno to mi</i> (serpent).	18. <i>Kanno to mi.</i>
7. <i>Kanno je una</i> (horse).	19. <i>Midsno je una.</i>
8. <i>Kanno to tsitsuse</i> (sheep).	20. <i>Midsno to tsitsuse.</i>
9. <i>Midsno je sar</i> (ape).	21. <i>Kino to sur.</i>
10. <i>Midsno to torri</i> (hen).	22. <i>Kino to torri.</i>
11. <i>Kino je in</i> (dog).	23. <i>Fino je in.</i>
12. <i>Kino to y</i> (hog).	24. <i>Fino to y.</i>

In the Mexican calendar, each of the four indictions of thirteen years begins with a different sign; in the Japanese calendar, each period of

\* Kämpfer, Hist. du Japon, 1729, vol. 1, p. 137, tab. 15.

twelve years is governed by one of the five male elements. As, among the Mexicans, the fourth term of the series of numbers, *nahui*, can correspond, in fifty-two years, only once to the second term of the series of signs, *acatl*; so among the Japanese, in a cycle of sixty years, one of the five male elements is placed but once with one of the twelve signs of the zodiac. The following table, which contains fourteen Mexican and Japanese years, will clearly explain the analogy, that exists between the calendars of the nations of Mexico and of Eastern Asia.



TABLE.

NUMBER OF THE YEARS.	CYCLE OF THE JAPANESE.	CYCLE OF THE MEXICANS.
	Let $\alpha, \alpha', \beta, \beta', \gamma, \gamma'$ be the male and female elements, and $a, b, c, \dots$ the celestial signs, and we shall have	Let $\alpha, \beta, \gamma, \delta$ , be the four signs of the years, and $a, b, c, \dots$ the thirteen names of the ciphers, and we shall have
1	$\alpha, a.$	$a, \alpha.$
2	$\alpha', b.$	$b, \beta.$
3	$\beta, c.$	$c, \gamma.$
4	$\beta', d.$	$d, \delta.$
5	$\gamma, e.$	$e, \alpha.$
6	$\gamma', f.$	$f, \beta.$
7	$\delta, g.$	$g, \gamma.$
8	$\delta', h.$	$h, \delta.$
9	$\epsilon, i.$	$i, \alpha.$
10	$\epsilon', k.$	$k, \beta.$
11	$\alpha, l.$	$l, \gamma.$
12	$\alpha', m.$	$m, \delta.$
13	$\beta, a.$	$n, \alpha.$
14	$\beta', b.$	$a, \beta.$

Periodical series are in use also in China, where ten *can* combined with twelve *tchi* denote the days or years of the periods of sixty days or sixty years \*. Among the Japanese, the Chinese, and the nations of Mexico, the periodical series can serve only to characterize fifty-two or sixty years. The Thibetans, on the contrary, have rendered the contrivance of series so complex, that they have names for one hundred and ninety-two, and even for two hundred and fifty-two years. In denoting, for instance, the memorable year, in which the great lhama Kan-ka-gnimbo, united, with the consent of the Emperor of China, the ecclesiastic and temporal powers \*; the inhabitant of Lhassa cites the year *male fire*, bird (*me po cia*) of the fourteenth cycle past since the deluge. He reckons fifteen elements; namely, five of the masculine gender, five of the feminine, and five neuter. By combining these fifteen elements with the twelve signs of the zodiac, and naming the first twelve years of the cycle only after the celestial signs, without adding any element, he obtains denominations for  $12 \times 15 + 12 = 192$  years. Adding finally sixty years denoted by the combination of ten male and female elements with the twelve signs of the zodiac, he finds his great cycle of two hundred

\* Observ. Astr. du P. Souciet, published by P. Gaubil, tom. 1, p. 26; tom. 2, p. 175.

and fifty-two years, Let  $a, b, c, \dots$ , be the signs of the zodiac;  $\alpha, \beta, \gamma, \dots$ , the neutral elements;  $\alpha', \beta', \gamma', \dots$ , the male elements; and  $\alpha'', \beta'', \gamma'', \dots$ , the female elements; we shall have, 1st, for the first twelve years,  $a, b, c, d, \dots$ ; 2dly, for the years 13–72,  $\alpha a, \alpha b, \alpha c, \dots$ ,  $\beta a, \beta b, \beta c, \dots$ ,  $\gamma a, \gamma b, \gamma c, \dots$ ; 3dly, for the years 73–132,  $\alpha' a, \alpha' b, \alpha' c, \dots$ ,  $\beta' a, \beta' b, \beta' c$ ; 4thly, for the years 133–192,  $\alpha'' a, \alpha'' b, \alpha'' c, \dots$ ,  $\beta'' a, \beta'' b, \beta'' c, \dots$ ; 5thly, for the years 193–252,  $\alpha' \alpha'' a, \alpha' \alpha'' b, \alpha' \alpha'' c, \dots$ ;  $\beta' \beta'' a, \beta' \beta'' b, \beta' \beta'' c, \dots$ .

The *Tzihi-chen*, or public calculators of Lhasa\*, allege in favour of the chronology of Thibet, that, as the years of the same name return only every two centuries, the date of an historical event is fixed, even when the cycle is not indicated. The uncertainty is greater among the Japanese, and among the Mexicans, where the same names occur every sixty or fifty-two years. We may be surprised, that the Thibetans, who from the highest antiquity made use of the same ciphers and the same system of numeration as the Hindoos, have not abandoned the complicated method of periodical series. This method, which takes its origin from astrological reveries, ought to have been employed only by people, who, like the Aztecks and the Toltecks, found

\* Georgi, *Alph. Tibet.* p. 516.

difficulty in expressing very considerable numbers, and whose annals were written in hieroglyphical characters.

We have just seen, that the Mexicans, the Japanese, the people of Thibet, and several other nations of central Asia, have followed the same system in the division of the great cycles, and in the denomination of the years that compose them. We have now to examine a fact, which more immediately concerns the history of the migrations of the natives, and which seems hitherto to have escaped the researches of the learned. I think it may be proved that a great part of the names, by which the Mexicans denoted the twenty days of their month, are those of the signs of a zodiac in use from the remotest antiquity among the nations of Eastern Asia. In order to demonstrate, that this assertion is less unfounded than it appears at first sight, I shall unite in the same table, 1st, The names of the Mexican hieroglyphics, such as they have been transmitted to us by every writer of the sixteenth century; 2dly, The Tartarian, Japanese, and Thibetan names of the twelve signs of the zodiac; and 3dly, The names of the naschatras, or lunar houses, of the calendar of the Hindoos. I flatter myself, that such of my readers as shall attentively examine this comparative table will feel interested in the discussion of the first divisions of the zodiac, on which we are going to enter.

TABLE.

SIGNS OF THE ZODIAC.				HIEROGLYPHICS OF THE D A Y S OF THE MEXICAN CALENDAR.	NACHSHATRAS OR LUNAR HOUSES OF THE HINDOOS.
HINDOOS, GREEKS, AND WESTERN NATIONS.	MANTCHOU TARTARS.	JAPANESE.	THIBETANS.		
Aquarius.	Singueri.	Nc.	Tchip, <i>rat, water.</i>	Atl, <i>water.</i>	<i>(The Mahara is a sea monster.)</i>
Capricorn.	Ouker.	Ous.	Lang, <i>ox.</i>	Cipactli, <i>sea monster.</i>	
Sagittary.	Pars.	Torra.	Tah, <i>tiger.</i>	Ocelotl, <i>tiger.</i>	
Scorpion.	Taoulai.	Ov.	Io, <i>hare.</i>	Tochtli, <i>hare.</i>	Serpent.
Balance.	Lon.	Tats.	Brou, <i>dragon.</i>	Cohuatl, <i>serpent.</i>	Cane.
Virgin.	Mogai.	Mi.	Proul, <i>serpent.</i>	(Acatl, <i>cane.</i> )	Razor.
Lion.	Morin.	Ouma.	Tha, <i>horse.</i>	(Tepatl, <i>silex, knife.</i> )	Traces of the feet of Vishnou.
Crab.	Koin.	Tsitsouse.	Lon, <i>goat.</i>	(Ollin, <i>path of the sun.</i> )	Alpe.
Twins.	Petchi.	Sar.	Prehou, <i>ape.</i>	Ozomatli, <i>ape.</i>	<i>Dog's tail.</i> <i>House.</i>
Bull.	Tukia.	Torri.	Tcha, <i>bird.</i>	Quauhtli, <i>bird.</i>	
Ram.	Nokai.	In.	Ky, <i>dog.</i>	Itzcuintli, <i>dog.</i>	
Fishes.	Gacai.	Y.	Pai, <i>hog.</i>	(Calli, <i>house.</i> )	



From the remotest periods, the nations of Asia were acquainted with the two divisions of the ecliptic, one into 27 or 28 houses, or lunar prefectures, the other into 12 parts. The assertion, that this last division was found only among the Egyptians, is erroneous. The most ancient monuments of Indian literature, the works of Calidas and Amarsinh\* mention both the 12 signs of the zodiac, and the 27 *campaigns of the moon*. From what we know of the communications which had taken place several thousands of years before our æra, between the nations of Ethiopia, Upper Egypt, and Hindostan, we ought not to consider all that they transmitted to the people of Greece as belonging exclusively to the Egyptians.

The division of the ecliptic into 27 or 28 lunar houses, is probably † more ancient than the division into twelve parts, which relate to the annual motion of the Sun. Phenomena repeated every lunation in the same order, fix the attention of men much more strongly than changes of position, the cycle of which is finished only in the space of a year. As the Moon is placed, in each lunation, near the same stars, it appears natural, that particular names should be given to the 27 or 28 constellations, through which she passes in

\* Asiatic Researches, vol. ii, p. 346.

† Le Gentil, vol. i, p. 261.

a synodical revolution. The names of these constellations have by degrees been given to the lunar days themselves, and this apparent connexion between the sign and the day is become the principal basis of the chimerical calculation of astrology.

On an attentive examination of the names, which the *nacshatras*, or lunar houses, bear in Hindostan, we recognise in them not only all the names of the Tartar and Thibetan zodiac, but also those of several constellations, which are identic with the signs of the Greek zodiac. Each *nacshatra* has  $13^{\circ} 20'$ , and 2 *nacshatras* correspond to one of our signs. The following table shows the great probability, that the solar zodiac took its origin from the lunar zodiac; and that the twelve signs of the former were chosen in a great measure among the 27 *nacshatras*.

LUNAR HOUSES.	SIGNS of the ZODIAC.
<i>Rat.</i>	<i>Rat, Aquarius.</i>
<i>Antelope.</i>	<i>Ox, Capricorn.</i>
<i>Arrow, bow.</i>	<i>Tiger, Sagittarius.</i>
<i>Tail of the lion.</i>	<i>Lion.</i>
<i>Beam of a pair of scales.</i>	<i>Dragon, Balance.</i>
<i>Serpent.</i>	<i>Serpent, Virgin.</i>
<i>Horse.</i>	<i>Horse.</i>
<i>Goat.</i>	<i>Sheep, Crab.</i>
<i>Ape.</i>	<i>Ape, Twins.</i>
<i>Eagle.</i>	<i>Bird, Bull.</i>
<i>Dog's tail.</i>	<i>Dog, Ram.</i>
<i>Fish.</i>	<i>Hog, Fish.</i>

In the Arabian sky, the belt of Orion is denoted under the name of *Mican*, the beam of a pair of scales ; and it seems so much more remarkable, that a lunar station of the Hindoos bears the same denomination, as, since the discovery of the zodiac of Tentyra, doubts have been raised with respect to the antiquity of the constellation of the Balance. It cannot be denied, that the signs, which compose the Egyptian, Chaldean, and Greek zodiac, were known in India from the remotest times ; and it is probable, that Julius Cæsar, when he added the Balance to the Roman zodiac, followed the

advice of the astronomer Sosigenes \*, who, born in Egypt, could not be ignorant of the division of the ecliptic used in the east. There is however no need † of raising doubts respecting the high antiquity of the sign of the Balance, to weaken the unfounded hypothesis, according to which a temple of Upper Egypt was built more than four thousand years before our æra.

Struck with the analogy that exists between the denominations of the nacshatras, and those of several signs of the zodiac of Thibet and of Greece, I have examined whether the constellations, which bear the same name, correspond to the same points of the heavens: and I find they do not, whether we suppose, that the first nacshatra, known under the denomination of the Horse, is the Horse of the Thibetan zodiac, and consequently the Lion of the Greek zodiac; or whether we admit with Sir W. Jones and Mr. Colebrooke ‡, that the commencement of the nacshatras is placed in the sign of the Ram, which is the Dog of the Thibetan zodiac. This last hypothesis would seem probable only if the lunar houses were reckoned *contrary to the order*

\* Buttman, in Ideler, Hist. Unt. p. 372—378.

† See a learned treatise by Visconti, inserted in the translation of Herodotus by Larcher (2d ed.), Tom, 2, p. 576; and Visconti, Miscell. di Museo Pio—Clementino, Tom. 6, p. 25, note, c.

‡ Asiatic Researches, Vol. 9, p. 118.

of the signs: then the six nacshatras denoted by the names of *two faces*, *three prints of the feet of Vishnou*, the *tail of the lion*, the *wreath of leaves*, the *arrow*, and the *head of the antelope*, would have represented our signs, the Twins, the Crab, the Lion, the Virgin, the Sagittary, and Capricorn. But on any of these suppositions, the Balance, the Lion, and the Ram, are not placed at the reciprocal distances which are fitted for them. According to the learned researches of the members of the society at Calcutta, the nacshatras *aswini*, horse; *pushya*, arrow; and *mula*, tail of the lion; answer to  $\alpha$  of the Ram,  $\delta$  of the Crab, and  $\gamma$  of the Scorpion, of the Greek zodiac, or to the dog, the sheep, and hare of the zodiac of Tartary and Thibet.

It may seem extraordinary, at first sight, that these nations, in forming from the twenty-seven or twenty-eight signs of the lunar calendar the twelve signs of the solar zodiac, should have preserved the names of a great number of constellations, without any regard to their absolute position, and to the order in which they follow each other; but we must not conclude thence, that the striking analogy between twelve nacshatras and an equal number of signs of the Thibetan and Greek zodiac is merely accidental. As the denominations of the lunar mansions have gradually descended even to the days, we may conceive, that they were become familiar to the people,



who were no doubt ignorant of the position of the stars of which the divisions of the ecliptic were composed. It is possible, that nations relapsed into barbarism had preserved but a confused remembrance of the names of the *nacshatras* ; and that in reforming their calender, they might have chosen among the names those of the signs of the solar zodiac, without following the order anciently adopted. It is possible also, and I am inclined to give the preference to this latter opinion, that the zodiac composed of twelve signs may have had its origin from an ancient lunar zodiac, in which the *nacshatras* were arranged in an order more analogous to that which we observe at present in the *dodecatemoria* of the people of Thibet and Tartary. In fact, the divisions of the ecliptic, which Sir William Jones, Colebrooke, and Sonnerat, have published, differ essentially from each other. The arrow, which according to one Indian writer is the eighth *nacshatra*, is only the twenty-third according to another. We shall see presently, in speaking of a Roman bas relief described by Bianchini, that in the East solar zodiacs formerly existed, which had the same signs, though placed in a different order. Moreover, the return of the Sun from the tropics toward the equator, and the phenomenon of the equal duration of the days and the nights, must have led to great changes in the figures

of the *nacshatras*, when a part only was employed to form the solar zodiac.

This intimate connexion between the lunar mansions and the signs of the zodiac is moreover evident in the names given by the Hindoos to the months and the years. These names, according to the curious investigations of Mr. Davis \*, are not those of the *dodecatemoria* of the solar zodiac ; they are taken from the *nacshatras* themselves, each month bearing the name of the lunar mansion, in which the full moon occurs. We have seen farther back, that at Thibet, in China, and among the Tartar nations, each year of the five indictions of the great cycle bears the name of one of the 12 animals of the solar zodiac. Among the Hindoos, the years take the name of the *nacshatras* in which Jupiter is at his heliacal rising. It is thus that *Aswini* (horse) or *Magha* (house) is the name of a year, of a month, and of a *tithy*, or lunar day ; as at Mexico the sign *tochtli* (rabbit) or *calli* (house) presides at the same time over the year, the half lunation, and the day.

From the whole of these considerations it follows, that the division of the ecliptic into twelve signs probably had its origin from the division into 27 or 28 lunar mansions ; and that

\* On the cycle of sixty years, *Asiat. Res.* vol. 3, p. 217—261.

the solar zodiac was primitively a lunar zodiac, each full moon being nearly two naeshatras and a quarter, or  $13^{\circ} 20'$  distant from that preceding. It is thus that the most ancient astronomy of nations is connected with the motions of the moon only. If it happen, that the twelve signs of the zodiac bear names that differ totally from those of the naeshatras, we must not hence conclude, that the stars themselves were distributed after a double division. In eastern Asia, the zodiac of twelve signs was, for a long time, only an abstract division\*, while the zodiac of twenty-seven or twenty-eight naeshatras was alone a real stellar zodiac. I have been led to insist on the intimate connexion that exists between the two divisions of the ecliptic, to show, that both may have given birth to the signs of the Mexican zodiac.

Let us examine first the analogy between the denominations of the Mexican days, and the signs of the Thibetan, Chinese, Tartarian, and Mongul zodiac. This analogy is striking in the eight hieroglyphics called *atl*, *cipactli*, *ocelotl*, *tochtli*, *cohuatl*, *quauhtli*, *ozomatli*, and *itzcuintli*.

*Atl*, water, is often indicated by a hieroglyphic, the parallel and undulating lines of which remind us of the sign we employ to denote

\* Bailly, Ast. Ind. p. 5; Ast. mod. tom. 3, p. 301.

*Aquarius.* The first *tse*, or asterism, of the Chinese zodiac, the rat (*Shou*), is also frequently represented under the figure of *water*\*. In the reign of the emperor Tchouen-hiu there was a great deluge; and the celestial sign Hiuen-hiao, which by its position answers to our *Aquarius*, is the symbol of this reign. Thus P. Souciet, in his *Researches on the Cycles and the Zodiac*, observes, that China and Europe agree in representing under different denominations the sign, which we name *Amphora*, or *Aquarius*. Among the western nations, the water that flows from the vase of *Aquarius* (χυσις υδατος) early formed a particular constellation (υδαρς), to which belonged the beautiful stars Fomalhaut and *Deneb kaitos*, as is evident † from several passages of Aratus, Geminus, and the scholiast of Germanicus.

*Cipactli* is a sea animal‡. This hieroglyphic bears a strong analogy to Capricorn, which the Hindoos and other nations of Asia call *sea monster*. The Mexican sign indicates a fabulous animal, a whale with a horn in its forehead.

\* Obs. mathem. du P. Souciet, published by P. Gaubil, tom. 3, p. 33.

† Ideler, Sternnamen, p. 197.

‡ Gama, Descrip. histor. y cronol. de dos Piedras (Mexico, 1792), p. 27 and 100.



Gomara and Torquemada \* call it *espadarte*, a name by which the Spaniards denote the narwal, the great tooth of which is known by the name of the unicorn's horn. Boturini took this horn for a harpoon, and erroneously translated *cipactli* by *serpent armed with harpoons*. As this sign does not represent a real animal, it is natural enough, that its form should vary more than that of any other sign. Sometimes the horn appears a lengthening of the muzzle, as in the famous fish *oxyrinchus*, represented in the place of the southern fish under the belly of Capricorn, in some Indian planispheres †: at other times the horn is entirely wanting. On casting our eyes on the figures in plate 23d and 27th, taken from very ancient drawings and reliefs, we see how much Valades, Boturini, and Clavigero were mistaken, in representing the first hieroglyphic of the Mexican days as a shark, or a lizard. In the manuscript in the Borgian museum, the head of *cipactli* resembles that of a crocodile; and this same name of crocodile is given by Sonnerat to the tenth sign of the Indian zodiac, which is our Capricorn.

Besides, the idea of the sea animal, *cipactli*, is connected in the Mexican mythology with the history of a man, who, at the epocha of the de-

\* Conquista, fol. 119. Mon. ind., tom. 3, p. 223.

† Philos. Transact., 1772, p. 353.



struction of the fourth sun, after having for a long time swam in the waters, saved himself alone, by reaching the top of the mountain Colhuacan. We have observed, that the Noah of the Aztecks, commonly called Coxcox, bears also the name of Teo-Cipactli, in which the word divinity, or *divine*, is added to that of *cipactli*. On looking into the zodiac of the nations of Asia, we find, that the Capricorn of the Hindoos is the fabulous fish *maharan*, or *souro* \*, celebrated for his exploits, and represented, from the most remote antiquity, as a sea-monster with the head of an antelope †. As the inhabitants of India, like the Mexicans, often indicate the *nacshatras* (lunar mansions) and the *laquenons* (dodecatemoria) by the heads only of the animals, which compose the lunar and solar zodiacs, we ought not to be surprised, that the western nations should have transformed the mahara into Capricorn (*ωιργονερος*); and that Aratus, Ptolemy, and the Persian Kaswini, should have given it the tail of a fish. An animal, which, after having for a length of time inhabited the waters, takes the form of an antelope, and scales the mountains, reminds nations, whose disturbed imagination associates objects the

\* Sonnerat, Voyage aux Indes, tom. 1, p. 310. Bailly, Astr. ind., p. 210.

† Asiat. Researches, vol. 2, p. 335, No. 7.

most remote from each other, of the ancient traditions of Menou, Noah, and the Deucalions famous among the Scythians and people of Thes-saly. It is true, according to Germanicus, that Deucalion, whom we may consider as the Cox-cox, or the Teo-Cipactli of the Mexican mythology, was placed not in the sign of Capricorn, but in the sign that immediately follows it, in that of Aquarius (Ἰδριχόος). In this circumstance there is nothing to surprise us ; it rather confirms the ingenious opinion of Mr. Bailli on the ancient connexion of the three signs of the Fishes, Aquarius, and Capricorn, or the antelope fish\*.

*Ocelotl*, tiger, the jaguar (*felis onca*) of the warm regions of Mexico ; *tochtli*, hare : *ozomatli*, female ape ; *itzcuintli*, dog ; *cohuatl*, serpent ; *quauhtli*, bird, are asterisms that bear the same names in the Tartar and Thibetan zodiacs. In the Chinese astronomy, the hare denotes not only the fourth *tse*, or sign of the zodiac ; the Moon, from the remote period of the reign of Yao, was figured as a disk, on which a hare †, seated on his hinder feet, turns a stick in a vase, as if employed in making butter ; a peculiar idea, which might have had its origin in the *steppes* of Tartary, where hares are abundant, and which are inhabited by shepherd na-

\* Astr. moderne, tom. 3, p. 297.

† Grosier, Hist. gen. de la Chine, p. 297.

tions. The Mexican ape, *ozomatli*, answers to the *heou* of the Chinese \*, to the *petchi* of the Mantchous, and to the *prehou* of the people of Thibet ; three names that denote the same animal. Procyon appears to be the ape *hanuan* †, so well known in the mythology of the Hindoos ; and the position of this star, placed on the same line with the Twins and the pole of the ecliptic, corresponds very well with the place which the ape holds in the Tartar zodiac, between the Crab and the Bull. Apes are found also in the sky of the Arabians ; they are stars in the constellation of the great dog, called *El-kurid* ‡ in the catalogue of Kazwini. I enter into these details respecting the sign *ozomatli*, because an animal of the torrid zone, placed among the constellations of the Mongul, Mantchou, Azteck, and Tolteck nations, is a very important point, not only in the history of astronomy, but also in that of the migrations of nations.

The sign *itzcuintli*, dog, answers to the last sign but one of the Tartar zodiac, to the *ky* of the Thibetans, to the *nokai* of the Mantchous, and to the *in* of the Japanese. P. Gaubil informs us, that the dog of the Tartar zodiac is our do-decatemorion of the *Ram* ; and it is very re-

\* Deguignes, Hist. des Huns, Tom. 1, p. 47.

† Dupuis, Origine des Cultes, Tom. 3, p. 363.

‡ Ideler, Sternnamen, p. 238, 248, 413.

markable, that, according to Le Gentil, among the Hindoos, though this people was unacquainted with the series of signs which begins with the rat, the place of the *Ram* is sometimes occupied by a *marron dog*. In the same manner, among the Mexicans, *itzcuintli* denotes the wild dog; for that which is tame is called *techichi*. Mexico formerly swarmed with carnivorous quadrupeds\* of a species between the wolf and the dog, which Hernandez has but imperfectly described. The race of these animals, known by the names of *xoloitzcuintli*, *itzcuintepotzotli*, and *tepeitzcuintli*, is perhaps not yet entirely destroyed; but probably withdrawn into the most desert and solitary forests. In the part of the country through which I passed, I have never heard any mention of a marron dog. Le Gentil † and Bailly were mistaken, when they asserted, that the word *mecha*, which denotes our ram, signifies a *marron dog*. This word of the Sanscrit language is the ordinary name of the ram, it is employed ‡ in a very poetical manner by an Indian author, who describes the combat of two warriors, saying, “ that by their heads they were two mecha  
 “ (rams); by their arms, two elephants; by their  
 “ feet, two noble coursers.”

\* See my *Tableaux de la Nature*, Tom. 1, p. 117.

† Le Gentil, *Voyage*, Tom. 1, p. 247.

‡ Observation de Mr. de Chezy.

The following table unites the signs of the Tartar zodiac with those of the days of the Mexican calendar:

ZODIAC OF THE MEXICANS.	<i>Ocelotl</i> , tiger. <i>Tochtli</i> , hare, rabbit. <i>Cohuatl</i> , serpent. <i>Ozomatli</i> , ape. <i>Itzcuintli</i> , dog. <i>Quauhtli</i> , bird, eagle.
ZODIAC OF THE MANTCHOU-TARTARS.	<i>Pars</i> , tiger. <i>Taoulai</i> , hare. <i>Mogai</i> , serpent. <i>Petchi</i> , ape. <i>Nokai</i> , dog. <i>Tukia</i> , bird, hen.

Without returning to the hieroglyphics water (*atl*) and the sea monster (*cipactli*), which exhibit a striking analogy with the asterisms of Aquarius and Capricorn, the six signs of the Tartar zodiac, found in the Mexican calendar,



are sufficient to render it extremely probable, that the people of the two continents drew their astrological ideas from a common source. Those features of resemblance, on which we insist, are not taken from uncouth or allegorical paintings, susceptible of being interpreted agreeably to the nature of the hypothesis which we seek to establish. If we consult the works composed, at the beginning of the conquest, by Spanish or Indian authors, who were ignorant even of the existence of a Tartar zodiac, we shall see, that at Mexico, from the seventh century of our era, the days were called *tiger, dog, ape, hare, or rabbit*; as throughout the whole of eastern Asia the years still bear the same names in the Thibetan, Mantchou-tartar, Mongul, Calmuck, Chinese, Japanese, Corean, and all the languages of Tonquin and Cochin China\*.

It may be conceived, that nations, which have never had any intercourse with each other, may make equal divisions of the ecliptic into 27 or 28 parts, and give each lunar day the name of the stars near which the Moon is placed in its progressive motion from west to east. It appears very natural also, that nations either of shepherds or hunters should denote these constellations, and these lunar days, by the names of the animals which are the constant objects of their affections

\* Souciet, Tom. 2, p. 138.

or their fears. The sky of the nomade tribes will be peopled with dogs, stags, bulls, and wolves, without its being at all necessary for us to conclude, that these tribes have formerly made part of the same people. We must not confound objects that resemble each other from mere accident, or from a similarity of situation, with those that attest a common origin, or ancient communications.

But the Tartar and Mexican zodiacs contain not only the animals peculiar to the climates which these people inhabit at present ; we find also apes and tigers, two animals that are unknown on the elevated plains of central and eastern Asia, to which a great elevation gives a colder temperature than that which reigns toward the west under the same latitude. The people of Thibet, the Monguls, the Mantchous, and the Calmucks, have therefore received from a more southern country the zodiac, which is too exclusively called the Tartar cycle. The Toltecks, the Aztecks, the Tlascaltecks flowed from the north toward the south : we are acquainted with Azteck monuments as far as the banks of the Gila, between  $33^{\circ}$  and  $34^{\circ}$  of northern latitude. History shows us the Toltecks coming from regions still more northerly. These colonists, issuing from Aztlan, did not arrive as barbarous hordes ; every thing that appertained to them betokened the remains of ancient civiliza-

tion. The names given to the cities which they built were the names of places which their ancestors inhabited ; their laws, their annals, their chronology, the order of their sacrifices, were modelled on the knowledge they had acquired in their primitive country. But the apes and the tigers, which figure among the hieroglyphics of the days, and in the Mexican tradition of the *four ages or destructions of the Sun*, do not inhabit the northern part of New-Spain, and the north-west coast of America. Consequently the signs *oxomatli* and *ocelotl* render it singularly probable, that the zodiacs of the Toltecks, the Aztecks, the Monguls, the Thibetans, and so many other nations now separated by a vast extent of country, originated on one and the same point of the ancient continent.

The lunar mansions of the Hindoos, in which we also find an ape, a serpent, a tail of a dog, and the head of an antelope, or of a sea-monster, exhibit still other signs, the names of which remind us of the *calli*, *acatl*, *tecpatl*, and *ollin*, of the Mexican calendar.

INDIAN NACSHATRAS.	MEXICAN SIGNS.
<p><i>Magha</i>, house.</p> <p><i>Venou</i>, cane.</p> <p><i>Crittica</i>, razor.</p> <p>(<i>Sravana</i>, three prints of feet.)</p>	<p><i>Calli</i>, house.</p> <p><i>Acatl</i>, cane.</p> <p><i>Tecpatl</i>, flint, knife of stone.</p> <p>(<i>Ollin</i>, motion of the Sun, represented by three prints of feet.)</p>

We shall first observe, that the Azteck word *calli* has the same signification as the *kuala*, or

*kolla* \*, of the Woguls, who dwell on the banks of the Kama and Irtisch; as *atel* (water in Azteck, and *itels* (river) in Vilel, recall to mind the words *atl*, *atelsh*, *etel*, or *idel*, (river) in the language of the Mongul Tartars, Tscheremisses, and Tschouwasses †. The denomination of *calli*, house, very well denotes a station or lunar mansion (in Arabic, *menazil el kamaa*) a place of repose. It is thus that among the Indian nacshatras, beside the *houses* (magha and punarvasu) we also find *bedsteads* and *matrasses*.

The Mexican sign *acatl*, cane, is generally figured as two reeds tied together ‡. But the stone found at Mexico in 1790, and which offers the hieroglyphics of the days, represents the sign *acatl* in a very different manner. We recognise in it a bundle of reeds, or a sheaf of maize contained in a vase. We shall observe on this occasion, that, in the first period of thirteen days of the year tochtli, the sign *acatl* is constantly accompanied by *Cinteotl*, who is the *goddess of maize*, Ceres, the divinity who presides over agriculture. Among the western nations, Ceres is placed in the 5th dodecatemorian: we even find very ancient zodiacs, in

\* Vater. Amer. Bevolker, p. 160.

† Engel, Ungar. Gesch. T. 1, p. 346, 361, Georgi, Reisen. B. 2, p. 904. Thwrocz, Chron. Hungaror., p. 49.

‡ Plate 27.



which a bundle of ears of corn \* fills up the whole of the place, which Ceres, Iris, Astrea, or Erigone, ought to occupy in the sign of the harvests and vintages. It is thus we find, from the remotest antiquity, among the most distant nations, the same ideas, the same symbols, the same tendency to refer natural phenomena to the mysterious influence of the stars.

The Mexican hieroglyphic *tecpatl* indicates a keen edged stone of oval form, lengthened at both ends, like those which were made use of as knives, or which were fastened to the end of a pike. This sign recalls to mind the *crittica* or sharp knife of the lunar zodiac of the Hindoos. On the great stone represented in the 23d Plate, the hieroglyphic *tecpatl* is figured in a manner somewhat different from the form commonly given to this instrument. The silex is pierced through the centre, and the opening seems destined to receive the hand of the warrior, who makes use of this weapon with two points. We know, that the Americans had a peculiar art of boring the hardest stones and working them by friction. I have brought from South America, and deposited at the Museum at Berlin, a ring of obsidian, which was a girl's bracelet, and forms a hollow cylinder near seven centimetres

\* Ideler, Sternnamen, S. 172. Dupuis, Origine des Cultes, Tom. 2, p. 228—234. Atlas, p. 6.

in diameter, four centimetres high, and three millimetres thick. We can scarcely conceive how a vitreous and fragile substance could be reduced to the state of so thin a plate. Besides, *tecpatl* differs from obsidian, a substance which the Mexicans called *iztli*; jade, hornstone, and flint being confounded under the denomination of *tecpatl*.

The sign *ollin* or *ollin-tonatiuh*, presides, in the beginning of the cycle of 52 years, over the seventeenth day of the first month. The explanation of this sign has greatly embarrassed the Spanish monks, who, without the slightest elementary notions of astronomy, attempted to explain the Mexican calendar. The Indian authors translate *ollin* by *motions of the Sun*. When they find the number *nahui* added, they render *nahui ollin* by the words *Sun (tonatiuh) in his four motions*; sometimes (Plate 37) like two ribands intertwined, or rather like two portions of curves, which cross each other, and which have three perceptible inflections at their summits; sometimes (Plate 23) like the solar disk surrounded with four squares, which contain the hieroglyphics of the numbers one (*ce*) and four (*nahui*); at other times like *three prints of feet*. The four squares allude, as we shall soon explain, to the famous tradition of the four ages, or four destructions of the world, which took place on the days 4 *tyger*, *nahui ocelotl*; 4 *wind*, *nahui*

*ehecatl* ; 4 rain, *nahui quiahuitl* ; and 4 water, *nahui atl* ; in the years *ce acatl*, 1 cane ; *ce tecpatl*, 1 flint ; and *ce calli*, 1 house. With these same days the solstices, the equinoxes, and the passages of the Sun across the zenith of the city of Tenochtitlan, very nearly corresponded.

The representation of the sign *ollin* by three *xocpalli*, or prints of the feet, as we often find them in the manuscripts at the Vatican, and in the Codex Borgianus, fol. 47, n. 210, is remarkable from the analogy which it seemingly offers with *sravana*, or the *three prints of the feet of Vishnou*, one of the mansions of the lunar zodiac of the Hindoos. In the Mexican calendar, the three prints indicate either the traces of the Sun in its passage across the equator, and its motion towards the two tropics, or the three positions of the Sun in the zenith, in the equator, and in one of the solstices. It is possible, that the lunar zodiac of the Hindoos contained some sign, which, like that of the Balance, might refer to the course of the Sun. We have seen, that the zodiac of twenty-eight signs may have been transformed by degrees into a zodiac of twelve mansions of the full Moon ; and that some *nacshatras* may have changed their denomination, since, from the knowledge of the annual motion of the Sun, the *zodiac of the full Moons* is become a real *solar zodiac*. Crishna, the Apollo of the Hindoos, is in fact no other than Vishnou, under

the form of the Sun\*, which is more particularly worshipped under the name of the god *Sourya*. Notwithstanding this analogy of ideas and of signs, we think, that the three footsteps, which form the twenty-third nacshatra, *sravana*, have only an accidental resemblance with the three prints of feet, that represent the sign *ollin*. M. de Chezy, who was very profoundly versed in the Persian and Sanscrit languages, observes, that the *sravana* of the Indian zodiac alludes to a legend highly distinguished among the Hindoos, and recorded in the greater part of their sacred books, particularly in the Bhagavat-Pouranam. Vishnou, desirous of punishing the pride of a giant, who thought himself as powerful as the gods, presents himself under the form of a dwarf, and entreats him to grant in his vast empire the space he can measure with three of his steps; the giant assents with a smile, and at the instant the dwarf rises to so prodigious a stature, that in two steps he measures the space between Heaven and Earth. As he asks, at the third step, where he can place his foot, the giant recognizes the god Vishnou, and prostrates himself before him. This fable so well explains the figure of the nacshatra *sravana*, that it would be difficult to admit the connexion of this sign with that of *ollin*; as *cipactli*, and the Mexican Noah,

\* Asiatic Researches, vol. 1, p. 200.



Teo-Cipactli, are connected with the constellation of Capricorn, and that of Deucalion, anciently placed in Aquarius.

We have now explained the correspondencies that exist between the signs of which the different zodiacs of India, Thibet, Tartary, and the hieroglyphics of the days and years of the Mexican calendar are composed. We have found that in these correspondencies, the most numerous and striking are those of the cycle of the twelve animals, which we have designated under the name of the zodiac of Tartary and Thibet. To finish a discussion, the results of which are so important to the history of the ancient communications of nations, we shall examine more closely this last zodiac; and prove, that, in the Asiatic system of astrology, with which the Mexican astrology appears to have a common origin, the twelve signs of the Zodiac preside not only over the months, but also over the years, the days, the hours, and even over the smallest parts of the hours.

When we consider, that the nations of eastern Asia employ at the same time divisions of the ecliptic into twenty-seven or twenty-eight, into twelve, and into twenty-four parts; and that the same signs of the solar zodiac bear denominations, and often figures, entirely different; we are tempted to believe, that this multiplicity of signs must produce an extreme confusion in the limits



assigned to the zodiacal constellations. Among the Hindoos, for instance, we find, beside the *naeshatras*, or lunar mansions, twelve *laquenons* the names of which are the same as those of the signs of the Greek and Egyptian zodiac. The Chinese divide the ecliptic in three manners, namely, into twenty-eight *naeshatras*, which they call *che* or *eal-che-po-sieou*\*; into twelve *tse*, which answer to our signs, but which bear names, partly mystical, and partly borrowed from the productions of the country, as *great splendor*, *profound void*, *head and tail of the quail*†; and into twenty-four *tsieki*. The denominations of these *tsieki*, or *half-tse*, relate to the climate, and the variations of temperature‡. The Chinese have besides two other cycles of twelve signs; that of the *tchi*; and that of the animals, the names of which are identic with those of the cycles of Thibet and Tartary; seven *che* answer to three *tse*, as six *tsieki* answer to three *tchi*, and three *celestial animals*. The cycle of these twelve Chinese animals, among which we have found the ape, the tiger, the rat (symbol of water), the dog, the bird, the serpent, and the hare, of the Mexican calendar, gives the

\* Souciet and Gaubil, vol. 3, p. 80.

† L. c, vol. 3, p. 98.

‡ L. c, vol. 3, p. 94. Bailly, Astr. ind. p. 96.

names to the cycle of twelve years, as well as to the small period of twelve days. The twelve animals are used, says P. Gaubil\*, to denote the twelve moons of the year, the twelve hours of the day and night, and the twelve celestial signs. But all these divisions into twelve parts, marked by different names, are, in the east of Asia, only abstract or imaginary divisions : they serve to recall to mind the motion of the Sun in the ecliptic ; but the real starry zodiac, as Mr. Bailly very well observes†, and as is confirmed by the more recent researches of Sir William Jones and Mr. Colebrooke, consists of the twenty-eight lunar mansions. It is true, they say in China, that the Sun *enters into the Ape, or the Hare*, as we say that it enters into the Twins or the Scorpion ; but the Chinese, the Hindoos, and the Tartars class the stars only according to the system of the nacshatras. The division of the zodiac into twenty-seven or twenty-eight parts, known from Yemen to the plains of Turfan and Cochinchina, belongs, as well as the small period of seven days, to the most ancient monuments of astronomy.

Wherever we observe at the same time several divisions of the ecliptic, differing not in the numbers of the asterisms, but in their denominations,

\* Souciet, vol. 2, p. 156, 174.

† Astr. ind. p. 5.

as the *tse*, the *tchi*, and the *celestial animals* of the Chinese, of the people of Thibet, and of the Tartars, this multiplicity of signs is probably owing to a mixture of several nations, who have been subdued one by the other. The effects of this mixture, those of the influence exercised by the conquerors on the vanquished people, are particularly manifest in the north-east part of Asia; the languages of which, notwithstanding the great number of Mongul and Tartar roots they contain, differ so essentially \* from each other, that they seem to defy any methodical classification. In proportion as we remove from Thibet and Indostan, we see the uniform type of civil institutions, of knowledge, and of religious rites, weaken and disappear. Now, if the hordes of eastern Siberia, among whom the dogmas of Bouddhism have evidently penetrated, appear nevertheless to be connected only by feeble ties to the civilized nations of southern Asia, ought we to be surprised, that, in the New Continent, along with some features of analogy in traditions, in chronology, and in the style of their remains, we should discover so great a number of striking differences? When nations of Tartar or Mongul origin, transplanted to foreign shores, mingled with the indigenous hordes of America, have found a road toward civilization

with great difficulty, their languages, their mythology, their divisions of time, every thing assumes a character of individuality, that almost effaces the primitive type of their national physiognomy.

In fact, instead of the cycles of sixty years, of years divided into twelve months, and small periods of seven days, used among the nations of Asia, we find among the Mexicans cycles of fifty-two years, years of eighteen months of twenty days each, half decades, and half lunations of thirteen days. The system of periodical series, the correspondent terms of which serve to denote the dates of the days and the years, is the same in both continents ; a great many of the signs that compose the series in the Mexican calendar are borrowed from the zodiac of the nations of Thibet and Tartary ; but neither their number, nor the order in which they follow each other, are those observed in Asia.

The Tartarian zodiac does not begin, like that of the Hindoos, with the Dog, which answers to our sign of the Ram, but with the Rat, which represents Aquarius\*. This same zodiac has besides the striking particularity, that the celestial animals are reckoned contrary to the order of the signs : instead of placing them in that which is marked

\* Souciet, vol. 2, p. 136. Bailly, *Ast. ind.*, p. 212. Langles, notes du Voyage de Thunberg, p. 319.

by the motion of the Sun in the ecliptic from west to east, the Thibetans, the Chinese, the Japanese, and the Tartars, reckon the signs in the following order ; *Rat*, or *Aquarius* ; *Ox*, or *Capricorn* ; *Tiger*, or *Sagittary* ; *Hare*, or *Scorpion*, &c. This singular habit has perhaps its cause in the circumstance, that the twelve zodiacal constellations in their passage over the meridian, preside over the different hours of the day and the night. As they share in the general motion of the celestial sphere from east to west, they are arranged in the order, according to which they rise or set one after the other.

In the Mexican calendar, the signs of the days which are identical with the signs of the Tartar cycle, those of the dog, the ape, the tiger, and the horse, are so placed, that no analogy of relative position can be recognised between them. *Cipactli*, which we have proved to be the antelope-fish, is the first asterism, as *Capricorn* seems to have been among the Egyptians\*. Among the Mexican signs nearly the following order prevails, *cipactli*, *cohuatl*, *tochtli*, *itzcuintli*, *ozomatli*, and *ocelotl* ; or, substituting the names of our signs, *Capricorn*, *Virgo*, the *Scorpion*, the *Ram*, the *Twins*, and *Sagittarius*. Is this difference in the arrangement of the signs mere-

\* Fragmentum ex Gazophylacio Card. Barberini (Kircheri *Œdipus*, 1653, vol. 3, p. 160).



ly apparent? and does it arise from a cause analogous to that, which, according to the testimony of Herodotus and Dion Cassius\*, led the people of the east to name the days of the week after the planets placed in a very different order from that assigned them by the astronomy of the Hindoos, the Egyptians and the Greeks? Considering the number of terms, that compose the series of the hours, and that of the Mexican hieroglyphics, we feel, that this hypothesis is not admissible.

In speaking of the analogy observable between the names of several lunar mansions, and those of the signs of the solar zodiac, we have explained how the primitive order of the asterisms may be changed, when nations, replunged into barbarism, endeavour from an obscure remembrance, to reestablish the system of their chronology. Although the supposition of these changes is obvious, we are nevertheless not forced to admit it, in order to explain the dissimilitude in the position of the same signs in the Tartar and Mexican zodiacs. The Hindoos preserve several divisions of the ecliptic into twenty-seven or twenty-eight *nacshatras*, the names of which are in great part the same, without being placed in the same order. An ancient monu-

\* Dion Cassius, lib. 37, c. 19. (Ed. Fabric., 1750, tom. I, p. 124). Herod., lib. 2, c. 69.

ment, made known by Bianchini in the beginning of the last century, proves, that there existed in the East solar zodiacs, in which are found the Tartarian asterisms of the Horse, the Dog, the Hare, the Dragon, and the Bird, arranged so that the Dog answers to the Bull, and not to the Ram of the Greek zodiac, while the Dog and the Hare are separated not by four, but only by two signs. Now if in Asia the same nacshatras, and the same dodecatemorions, have not always followed the same order in the different lunar and solar zodiacs, we must not be surprised at the transposition of the signs observed in the cycle of the hieroglyphics of the day among the Mexicans. It is even possible, that this transposition may be merely apparent, and may appear real to us, because we can compare the Tolteck and Mexican calendars only to the cycles which we find at present among the Tartars and the Thibetans. Perhaps other nations of eastern Asia have communicated their zodiac to those warlike hordes, which have inundated Mexico since the seventeenth century. Perhaps in traversing the elevated plain of central Asia, and examining more attentively the remains of civilization preserved in little Buckharia, at Turfan, or near the ruins of Karacorum, the ancient capital of the empire of the Monguls, travellers may some day discover the

same series of signs, as is contained in the zodiac of the Mexicans.

The astronomical monument, of which Bianchini sent a drawing to the academy, is a marble fragment preserved in the Vatican, and found at Rome in 1705. We propose here to examine it with particular attention, because it seems well adapted to throw light on the divisions of the ecliptic used in Mexico and eastern Asia. It exhibits, in five consecutive zones, the figures of the planets, the decani, the asterisms of the Greek zodiac repeated twice, and the signs of another zodiac, which has the greatest analogy with that of the Tartar nations. We may be surprised, that Fontenelle, Bailly, Dupuis, and other distinguished men of letters, who have written on the origin of the zodiacs, should have taken this bass-relief for an Egyptian work\*. According to the observation of Mr. Visconti, the style of the figures representing the planets evidently proves, that it was sculptured in the time of the Cæsars. In this mutilated monument we recognise, among the signs of the interior zone, a horse, a crab, a serpent, a dog that

\* Hist. de l'Acad. des Sciences, 1708, vol. 1, p. 110. Bailly, Hist. de l'Astr. anc., p. 493 and 504. Dupuis, Origine des Cultes, vol. 1, p. 180. Hager, Illustraz. d'uno Zodiaco orientale, 1811, p. 15.

bears some likeness to the wolf, a hare, two birds, one of which seems placed opposite to a serpent, and two quadrupeds, one with a long tail, and the other with goat's horns. As the asterisms of the Greek zodiac were arranged one by one with those of the unknown zodiac, we see, that the Horse and the Hare answer, as in the Tartar dodecatemorions, to our signs of the Lion and the Scorpion. The following table exhibits the order, in which the asterisms are placed in the planisphere of Bianchini. I have added the signs of the Tartar cycle, of which we found vestiges among the nations of the New Continent.

ZODIAC OF BIANCHINI.		TARTAR CYCLE.
EXTERIOR ZONE.	INTERIOR ZONE.	
Sagittarius.	<i>Bird.</i>	Tiger.
Scorpion.	Hare.	Hare.
Balance.	<i>Goat.</i>	Dragon.
<i>Virgin.</i>	<i>Animal with a long tail.</i>	Serpent.
<i>Lion.</i>	Horse.	Horse.
Crab.	Crab.	Sheep.
Twins.	Serpent.	Ape.
Bull.	Dog or Wolf.	Hen.
Ram.	<i>Bird.</i>	Dog.
<i>Fishes.</i>	.....	Hog.
<i>Aquarius.</i>	.....	Rat.
<i>Capricorn.</i>	.....	Ox.

The names of the animals, which are too much mutilated to be known with certainty, are printed in *italics*; the asterisms of the Greek sphere, which are entirely erased, are distinguished in the same manner. I have arranged these last contrary to the order of the signs, according to the practice of the Tartarian nations.



It is remarkable enough, that, in this curious monument, the planets and the decani, the last of which only are figured in the Egyptian style with heads or masks of animals, are found placed in contrary directions. Though in the two zones, which represent the Greek zodiac, four signs are repeated under the same forms, we must not thence conclude that the others were equally identic. It were above all to be wished, that the Twins, and Pan, or Capricorn, had been preserved in the two zones; for the sculptor seems to have had the intention of uniting the zodiacs of different nations, and the heterogeneous forms\* given to the same asterisms among the Chaldeans, the Egyptians, and the Greeks. The Twins are represented by two figures, which Mr. Bailly thought to be of different sexes, one of which holds a club, and the other a lyre. It is under this same form, that this sign is described in the *Astronomicon* of Hyginus †; and thus that it is figured in the Sanscrit verses of the poet Sripeti: “the couple, *mithouna*,” says this Hindoo writer, “is composed of a girl,

\* Eratosthenis Cataster., ed. Schaubach., 1795, page 21, Hygin. Poeticon Astr., lib. 2, c. 28; lib. 3, c. 27. (Auctores Mythographi Latini, ed. van Stuveren, 1742, tom. 2, page 481—528).

† Lib. 3, c. 21. (Auct. Mythograph. tom. 2, page 523). Du Choul, Discours de la Religion des Anciens Romains, 1556, page 180. Ideler, Sternnamen, s. 151.

who plays on the vina, and of a young man, who brandishes a club\*.”

The interior zodiac contains, like that of the Thibetans, the Chinese, and the Tartars, only animals, real ζωδια. In the Greek sphere, half the signs are formed of animals found in nature, the other half is composed of human figures, and fabulous or allegorical beings. The Balance, ζυγος, or λιτρα, is held sometimes by the claws, χηλαι, of the Scorpion†; at others by a male figure, as in the planisphere of Bianchini, and in the Indian zodiac; and at others by the Virgin, who in this case assumes the name of Astrea. δικη. The signs of the lunar mansions, or the hieroglyphics of the days of the Mexican calendar, are represented both by animals and inanimate objects. If we adopt the ingenious idea of Mr. Hager, according to which the sacred stone, brought by Michaux from the banks of the Tygris, is an ancient zodiac, we shall find, that, among the Chaldeans, the series of the real ζωδια was also interrupted by altars, towers, and houses‡. This last fact is favourable to the hypothesis, that the dodecatemorions owe their origin to the lunar mansions, or houses. The same stone appears to offer another analogy. In

\* Asiat. Res. vol. 2, page 335.

† Manil., lib. 1. vol. 609.

‡ Illustrazione d'uno Zod. Orientale, cap. 8, p. 39, trav. 2.

the Tartarian cycle, the Tiger corresponds to Saggiarius, often indicated merely by an arrow. In the zodiac described by Mr. Hager, we find, beside the wolf, a marron dog, and Capricorn, or the Antelope-fish, an arrow, which represents the river Tygris. This analogy is merely accidental; for the name of the river has nothing in common with that which the animal, the tiger, bears in the East.

When we recollect, that the zodiac which contains a dog, a hare, and an ape, belongs exclusively to Eastern Asia, and that it has probably passed thence into America, we are surprised to see, that it was known at Rome in the first ages of our era, the period at which the planisphere of Bianchini was sculptured. The astrologers, or Chaldeans, established in Greece and in Italy, had no doubt communications with those of Asia; and these communications must have become more frequent and extensive, in proportion as astrology was more in vogue among the people, and at the court of the Cæsars. Of eight signs, which are recognisable in the planisphere of Bianchini, there is only one, the Crab, which does not belong to the Tartar zodiac. The hare, which is found among the Thibetans and Mexicans, has the legs somewhat longer, but is sufficiently characterized by its place in the Scorpion. I am ignorant why Mr. Bailly took the dog, or wolf, for a hog, which

animal nevertheless is also in the Tartarian zodiac : it corresponds to the signs of the Fishes of the Greek sphere ; and, what is very remarkable, in the planispheres of the temple of Tentyra, a figure holding a hog in its hand is seen twice near the same sign \*. The monument described by Bianchini is so much the more interesting, as we recognize in no astronomical work either Greek or Latin, not even in the Saturnalia of Macrobius, written in the time of Theodosius, the traces of this cycle of animals, which the Monguls, and other Tartar hordes, who ravaged Europe, undoubtedly used in their chronology : and with which we have become well acquainted only from our communications with China and Japan. It seems strange, that the eloquent historian of the academy, Fontenelle, should not have remembered, that astrological reveries are intimately connected with the first notions of astronomy ; and that they were of service in throwing light on the ancient communications of nations with each other. “ The monument,” says he, “ in which Bianchini sought explanations, belongs to the history of the folly of mankind, and the academy has something better to do, than waste its time in researches of this kind.”

In resuming what we have stated respecting

\* Denon, Voyage, Pl. 130 and 132.



the different divisions of the ecliptic, and the signs that preside, in both continents, over the years, the months, the days, and the hours, we find the following results. Among the nations that have turned their attention to the starry vault, the lunar zodiac, divided into twenty-seven or twenty-eight mansions, is more ancient than the zodiac in twelve parts, which, from being at first only a zodiac of full-moons, is become a solar zodiac. The names of the months are sometimes chosen among the lunar mansions, as with the Hindoos; at other times they are those of the dodecatemorions, as in the Dionysian year. On the banks of the Ganges, they still say, the months Arrow, House, or Head of the Antelope; as in the time of Ptolemy-Philadelphus they said at Alexandria, the months Didymon, Parthenon, and Aegon, months of the Twins, the Virgin, and Capricorn \*. An intimate connexion is observed between the names of the dodecatemorions and those of the nacshatras: among several nations, the latter have passed to the lunar days. Beside the real division of the ecliptic, which is a zone of the starry heaven, there still exists, and especially in Eastern Asia, divisions of the time, which the Sun employs in returning nearly to the same stars, or the same point of the horizon. These cycles, generally

\* Ideler, *Hist. Untersuch.*, §. 264.



composed of twelve or twenty-four parts, according to the number of the lunations, or half-lunations, that have elapsed, belong rather to chronology, than to astronomy; they present only an ideal division of the ecliptic, of which each part takes a name and a particular sign. Such are the Tartarian animals, the *tse* and the *tsieki* of the Chinese. These signs, which measure only the time, and subdivide the seasons, may be invented by nations, who do not fix their attention on the stars. We may find a real zodiac composed of twelve signs, which preside over the months; and, by the contrivance of periodical series, over years, days, and hours, even in the lower regions of Peru, where a thick cloud of vapors withholds the view of the stars from the inhabitants, without concealing from them the disks of the Sun and Moon. The signs of the ideal zodiac, the complete revolution of which (the circle, *annulus*) forms a year (*annus*, *ἐνιαυτός*), are easily transferred to the constellations themselves; and hence the *division of time*, becomes a *division of the sphere*.

We shall not discuss whether the zodiac of the Hindoos, the Chaldeans, the Egyptians, and the Greeks, had not also been originally\* a cycle, the signs of which pointed out the variations of

\* Rhode, Versuch ueber das Alter des Thierkreises, 1809, s. 15 and 101.

the climate in a country subject to periodical inundations. The unequal extent occupied by the Virgin and the Crab, and the want of Connexion \* observed between the figures of the dodecatemorion and the extrazodiacal constellations, appear to give some probability to this supposition. We see in fact, that there are nations, who employ at the same time several divisions of the ecliptic; and that the signs, which, in one nation, belong to constellations, are with another nation only divisions of time. Perhaps there existed formerly some region of Asia, in which the Tartarian cycle of the celestial animals, which Bailly considers as the oldest of the zodiacs, while Dupuis † strives to make it pass for a table of paranatellons, was a real division of the stars placed in the ecliptic. In order to understand clearly the relations, which from the remotest periods were formed between the nations of both continents, we should not lose sight of the intimate connexion, that exists between the imaginary and the real zodiac, between the cycles and the constellations of the ecliptic, between the mansions and the division of the solar orbit.

The same considerations on the progressive

\* *Recherches sur l'Origine des Constellations de la Sphere Grecque*, 1807, p. 65.

† *Origines des Cultes*, tom. 3, p. 362.

unfolding of astronomy prevent us from deciding, whether the hieroglyphics of the days and the years of the Tolteck and Azteck calendar, like the Chinese *tse* and *tchi*, belong only to an imaginary or fictitious zodiac, or whether they denote zodiacal constellations. We have already observed, that the great wheels, which represent the cycle of fifty-two years, were encircled by a serpent biting his tail, and with four folds to mark the four indictions. The hieroglyphics being arranged in periodical series of four terms, and the intervals that separate one fold from another containing twelve years, each knot of the serpent corresponded to another sign. I think these four knots, denoted by the asterisms *rabbit*, *cane*, *silex*, and *house*, alluded to the points of the solstices and the equinoxes, or the intersection of the colures with the ecliptic. The most ancient division of the zodiac, says Albategni \*, is that into four parts. In fact, in the first year of the great cycle of the days *matlactli tochtli* (10 rabbit) *chicuei acatl*, (8 cane), *chicome calli* (7 house), and *matlactli tecpatl*, (11 flint), answered to the 22d of December, the 22d of March, the 20th of June, and the 23d of September. These days are but little distant from the equinoxes and solstices ; and as the Mexican

\* De Scientia Stellarum, cap. 2, (ed. Bonon., 1645, page 3).

year began in the winter solstice, like the year of the Chinese, it is natural enough, that, in the periodical series of the signs of the years, the first term should be *tochtli*, though in the series of the twenty signs of the days *tochtli* is preceded by *calli*.

We also know, from the notions which Siguenza derived from the works of Ixtlilxochitl, that the four folds of the serpent, and the four asterisms which belong to them, indicate the four seasons, the four elements, and the cardinal points. Earth was dedicated to the rabbit, and water to the cane; and we have seen, in speaking of the signs of the night, that Tepeyollotli, one of the divinities who dwelt in caverns, and Cinteotl, the goddess of the harvests, accompany the diurnal signs rabbit and cane. The sense of these allegories is too clear to want explanation. The four signs of the equinoxes and solstices, chosen in a series of twenty signs, recall to mind also the four *royal stars*, Aldebaran, Regulus, Antares, and Fomalhaut, celebrated throughout Asia, and presiding over the seasons\*. In the New Continent, the indications of the cycle of fifty-two years form, as it were, the four seasons of the great year; and the Mexican astrologers were pleased in seeing one of the four equi-

\* Firmicus, Lib. 6, c. 1.

noxiæ signs presiding over every period of thirteen years.

Though the same signs were used and arranged in the same order, in every part of the Mexican empire, some difference was nevertheless observed in the choice of the solstitial and equinoxiæ sign placed at the head of the *xiuhmolpilli*, or *ligature* of the years. The inhabitants of Tezcuco began the great year by *acatl*; those of Teotihuacan, by *calli*; the Toltecs by *tecpatl*. It has been doubted, whether, among the same nations, notwithstanding the difference we have just indicated, the first day of the year was constantly the sign *cipactli*; but the fragments of their historic annals, preserved in the Boturini Museum, and in the collection of P. Pichardo, at Mexico, seem to indicate, that the variety of dates proceeds from the time at which the intercalation of the thirteen days was made, and not from the different manner of marking the beginning of the cycle.

We are ignorant whether the twenty signs of the Mexican days are the remains of an ancient division of the zodiac into twenty-eight lunar mansions; or whether with the four signs of the night, the names of which are not found among those of the days, they anciently formed twenty-four asterisms, like the *tsieki* of the Chinese zodiac. An equal number of signs had perhaps



been placed between the four equinoxial and solstitial signs ; perhaps the number of twenty was derived only from a division of the visible hemisphere into ten parts. It is certain, that this same division engaged the Mexicans to divide the year of three hundred and sixty days into eighteen months ; and that it became the basis of a system, of which we find no vestige in the Old Continent. I am induced however to think, that the division into eighteen months of twenty days is posterior to another into twelve moons of thirty days ; for the method of making a sign of the zodiac preside over each day, and of determining the number of the months by the return of the periodical series, must have been adopted later than the more obvious idea of dividing the year according to the number of lunations it contains. Although the divisions of the ecliptic into twenty-four *tsiekis* \*, and into thirty-six *decani*, exist in Asia, these divisions have never led to years of ten or fifteen months : and, if antiquity speaks of those of four, six, or twenty-four months, these divisions do not depend on the use of periodical series, like the eighteen months of the Mexican year, but on the importance assigned to the equinoxial and

\* Amiot, in les Mémoires concernant les Chinois, vol. 2, p. 161. Gaubil, Traité de l'Astronomie Chinoise, p. 32.

solstitial points, to the cycles of sixty days, and the durations of the half lunations.

We have already observed, that the Mexican year, like that of the Egyptians and Persians, was composed of three hundred and sixty days, to which were added five epagomena, termed furtive (*musteraka*), or useless (*nemontemi*). If the Mexicans had been unacquainted with the excess of the duration of the revolution of the Sun over three hundred and sixty-five days, the beginning of their year, like that of the vague year of the Egyptians, would have passed, in about one thousand five hundred and eight years, through every season and every point of the ecliptic. Four centuries had elapsed after the reform of the Mexican calendar in 1091, before the arrival of the Spaniards. The writers of that time affirm, that at this epocha the calendar of the Europeans coincided within a few days with the Azteck calendar: and the accurate calculation of the eclipses of the Sun marked in the Mexican annals even render it probable, that the difference observed between the two calendars proceeded wholly from our own not having yet undergone the Gregorian reform. Let us now examine what was the mode of intercalation, by which the Mexicans avoided the errors of their chronology.

The Mexican year being solar, and not lunar,

admitted a far more simple mode of intercalation, than that of the Greeks and Romans before the introduction of the Merkidinus. If we cast our eyes upon the intercalations used among different nations, we see that some permit the hours to accumulate till they form a whole day, while others neglect the intercalation till the supplementary hours form a period equal to one of the great divisions of their year. The first mode of intercalation is that of the Julian year, the second is that of the ancient Persians, who added, every one hundred and twenty years, a whole month of thirty days to a year of twelve months, and so that the intercalary month ran through the whole year in  $12 \times 120$  or fourteen hundred and forty years \*. The Mexicans have evidently followed the system of the Persians; they retained the vague year, till the supplementary hours formed a half lunation, and they intercalated consequently thirteen days in every *ligature*, or cycle of fifty-two years. Hence it followed, as we have already observed, that each ligature contained  $\frac{18993}{13}$ , or one thousand four hundred and sixty-one small periods of thirteen days. The Mexican year began at the commencement of the *xiuhmolpilli*, on the day which corresponds to the 9th of January of the Gregorian calendar. The fifth, ninth, and thirteenth years

\* Ideler, Hist. Unters., s. 379.

of the cycle, the first day of the year was the 8th, the 7th, and the 6th of January ; in every year of the sign *tochtli* the Mexicans lost a day ; and by the effect of this retrogradation, the year *calli* of the fourth indiction began the 27th of December, and finished at the winter solstice, the 21st of December, not reckoning the five useless or complementary days. Hence it results, that the last of the nemontemi, called *cohuatl*, and considered as the most unlucky day, because it belonged to no period of thirteen days, fell, at the end of the cycle, on the 26th of December ; and the thirteen intercalary days brought back the beginning of the year to the 9th of January. In order to render what we have just explained more clear, we shall here add the table of the last twenty-five days of the first year of the cycle.

GREGORIAN CALENDAR.		Tonalpohualli.	METZLAPOHUALLI.			
			Series of 13 Numbers, and of 20 Signs of the Day.	Series of 9 Signs of the Night.		
DECEMBER, 1091.	15	1	27th Period of 13 Days.	3 Cipactli.	Tepeyollotli.	
	16	2		4 Ehecatl.	Quiahuitl.	
	17	3		5 Calli.	Tletl.	
	18	4		6 Cuetzpalin.	Tecpatl.	
	19	5		7 Cohuatl.	Xochitl.	
	20	6		8 Miquiztli.	Cinteotl.	
	21	7		9 Mazatl.	Miquiztli.	
	22	8		10 Tochtl.	Atl.	
	23	9		11 Atl.	Tlazolteotl	
	24	10		12 Itzcuintli.	Tepeyollotli.	
	25	11		13 Ozomatli.	Quiahuitl.	
	26	12		28th Period of 13 Days.	1 Malinalli.	Tletl.
	27	13			2 Acatl.	Tecpatl.
28	14	3 Ocelotl.	Xochitl.			
29	15	4 Quauhtli.	Cinteotl.			
30	16	5 Cozcaquauhtli	Miquiztli			
31	17	6 Ollin.	Atl.			
JANUARY, 1092.	1	18	7 Tecpatl.		Tlazolteotl.	
	2	19	8 Quiahuitl.		Tepeyollotli	
	3	20	9 Xochitl.		Quiahuitl.	
	4	Nemontemi.	10 Cipactli.		.....	
	5		11 Ehecatl.		.....	
	6		12 Calli.		.....	
	7		13 Cuetzpalin		.....	
	8		5	1 Cohuatl.	.....	
	9	1	1st Period of 13 Days.	1 Cipactli.	Tletl.	
	10	2		2 Ehecatl.	Tecpatl.	
	11	3		3 Calli.	Xochitl.	
	12	4		4 Cuetzpalin.	Cinteotl.	
	13	5		5 Cohuatl.	Miquiztli.	
	14	6		6 Miquiztli.	Atl.	
	15	7		7 Mazatl.	Tlazolteotl.	



The intercalation of thirteen days was celebrated by a great secular festival, called *xiuhmolpia*, or *toxiuhmolpilia* (ligature of our years), and described by all the historians of the conquest\*. The Mexicans believed, according to a very ancient prediction, that the end of the world would take place at the termination of a cycle of fifty-two years; that the sun would no more appear on the horizon; and that mankind would be devoured by evil genii of hideous appearance, known under the name of *Txitzimimes*. This belief was no doubt connected with the Tolteck tradition of the *four ages*, according to which the Earth had already undergone four great revolutions, three of which had taken place at the end of a cycle. The people passed in the deepest consternation the five complementary days, which preceded the *xiuhmolpia*: on the fifth day, the sacred fire was extinguished in the temples by order of the *teoteuctli*, or high priest; in the convents, the number of which was as considerable at Tenochtitlan, as it has been from the remotest periods in Thibet and Japan, the monks, or *tlamacazquis*, devoted themselves to prayer: at the approach of the night, no person dared light the fire in his house;

\* Torquemada, de una Fiesta grandissima, lib. 10, c. 33—36; tom. 2, page 312 et 321. Acosta, lib. 6, c. 2, p. 259.

the vessels of clay were broken, garments torn, and whatever was most precious was destroyed, because every thing appeared useless at the tremendous moment of the last day. Amidst this frantic superstition, pregnant women became the objects of peculiar horror to the men ; their faces were hidden with masks, made with paper of the agave ; they were even imprisoned in the store-houses of maize ; from a persuasion, that, if the cataclysm took place, the women, transformed into tigers, would make common cause with the evil genii (tzitzimimes), to avenge themselves of the injustice of the men.

In the evening of the last day of the nemon-temi, which is presided by the sign of the serpent, began the festival of the *new fire*. The priests took the dresses of their gods ; and, followed by an immense crowd of people, went in solemn procession to the mountain of Huixachtecatl\*, two leagues from Mexico, between Iztapallapan and Culhuacan. This lugubrious march was called the march of the gods, teone-nemi ; a denomination which reminded the Mexicans, that the gods had quitted their city, and that perhaps they would see them no more. When the procession had reached the summit of the porphyritic mountain of Huixachtecatl, it waited the moment when the Pleiades ascended

\* Vixachtla, from Gomara, Conquista, fol. 133 (a).

the middle of the sky, to begin the horrible sacrifice of which we have spoken \*, in the description of plate 15th, No. 8. The corpse of the victim remained stretched on the ground, and the instrument made use of to kindle the fire by rubbing (*πορεια* of the Greeks, *tletlaxoni* of the Mexicans) was placed on the wound, which the priest of Copulco, armed with a knife of obsidian, had made in the breast of the prisoner destined to be sacrificed. When the bits of wood (*la harina del palillo*), detached by the rapid friction of the cylinder, had taken fire, an enormous pile, previously prepared to receive the body of the unfortunate victim, was kindled. The flames of the pile were seen from a great part of the valley of Mexico, on account of the height of the mountain on which this sanguinary rite was performed ; and the people filled the air with joyful exclamations. All those who were unable to follow the procession were stationed on the terraces of houses, or the tops of the *teocallis*, or the hills that arose in the middle of the lake ; their eyes were fixed on the spot where the flame was to appear, a certain presage of the benevolence of the gods, and of the preservation of mankind during the course of a new cycle. Messengers posted at respective distances, holding branches of the wood of a very resinous pine,

carried the new fire from village to village, to the distance of fifteen or twenty-leagues ; it was deposited in every temple, whence it was distributed to every private dwelling. When the Sun began to appear on the horizon, the acclamations redoubled. The procession went back from the mountain of Iztapalapan, to the city ; and the people thought that they beheld their gods return to their sanctuaries. The women were then released from prison ; every one put on new dresses, and the thirteen intercalary days were employed in cleansing the temples, in whitening the walls, in renewing their household furniture, their plate, and whatever else was necessary for domestic use.

This secular festival, this apprehension of seeing the fifth sun extinguished at the epoch of the winter solstice, seems to present a new instance of analogy between the Mexicans and the inhabitants of Egypt. Achilles Tatius\*, in his commentary on Aratus, has preserved the following account, which Scaliger thinks is borrowed from the *Octaeterides* of Eudoxus. “ When the Egyptians saw the Sun descend from the Crab

\* Achil. Tat., *Isag. in Phænom.*, c. 23, (Petavius de *Doctr. Temp.*, 1703, tom. 3, p. 85). Scalig., *Adnot. ad Manil. Astron.*, lib. 1, v. 69, p. 85. See also the French translation of the *Letters of Count Carli*, tom. 1, page 398, note 1.

towards Capricorn, and the days gradually diminish, they were accustomed to sorrow from the apprehension, that the Sun was to abandon them entirely. This epocha coincided with the festival of Isis: but when the orb began to re-appear, and the duration of the days grew longer, they robed themselves in white garments, and crowned themselves with flowers (*λευχειμονήσαντες εστεφανηφόρῳσαν*).” On reading this passage of Achilles Tatius, we think we peruse what Gomara and Torquemada relate respecting the festival of the Mexican jubilee. In the same manner\*, in the work of Sextus Empiricus† against the astrologers, we find as it were the description of the symbolical figure ‡, which we have engraved in plate 15th, from the manuscript preserved at Veletri. In every nation on Earth superstitious ideas assume the same form at the rise and fall of civilization; and it is on account of this analogy, that it is difficult to distinguish what has been communicated from country to country, and what man has drawn from an interior source.

\* Dupuis, *Mém. explicatif du Zodiaque*, 1806, page 145.

† *Sext. Empir. contra Mathem.*, lib. 5, (ed. Stephan., tom. 3, p. 187). *Firmicus*, lib. 2, c. 27, (ed. Ald. Manut. 1503, fol. 105). *Origen. contra Celsum*, lib. 8, c. 55, (ed. Delarne, 1733 tom.) 1, page 783.

See above, page 206, Pl. 15.



P. Torquemada, speaking of the secular festival, marks the moment of the sacrifice apparently in a very exact manner, but which contains a real contradiction. "When the procession \*," says he, "reached the foot of the mountain of Huixachtecatl, the priests waited till midnight, which they knew by the position of the Pleiades, which at this hour had attained the mid-sky, (*estavan encumbradas en medio del cielo*): for the time of the jubilee or secular festival was arrived, when these stars rose at the beginning of the night; which for *the horizon of Mexico* is generally in the month of December." The expression, "when the Pleiades had attained the mid-sky," means without doubt the passage of the stars across the meridian, or what is nearly the same thing for the calendar of Mexico, their passage through the zenith. Now the last secular festival was celebrated in the sixth year of the reign of Montezuma; and at that epoch, the culmination of the Pleiades took place at midnight, if we take into account the procession of the equinoxes, not in the month of December, but on the 8th of November. On the 26th of December, this constellation rose 3<sup>h</sup> 23' before sunset, and its passage across the meridian was at 8<sup>h</sup> 33' in the

\* Torquemada, Tom. 3, p. 313, b. et 321 a.

evening. These circumstances are naturally the same for every part of the Earth, where we may suppose the Mexican calendar to have been formed ; and if we go back to the first sacrifices celebrated at Tlalixco in 1091, or to the migrations of the Toltecks in the sixth century of our era, we find, that, toward the winter solstice, from the effect of the precession of the equinoxes, the culmination of the Pleiades draws nearer sunset. It is probable, that the expression, “ at the moment of midnight,” and “ mid-sky,” ought not to be taken in the literal sense. Torquemada speaks generally in so confused a manner of the system of the chronology of the Mexicans, that it may be supposed he had misconceived all that the Indians told him respecting their astronomical phenomena. After having formally stated, that the cycle, and consequently the year, finished in the month of December, he admits, that the first day of the year is the 1st of February ; and he adds, that at the winter solstice the Sun attains at Mexico the *most elevated* point of its course. Torquemada has collected with the most scrupulous exactness, names, traditions, and isolated facts ; but, utterly devoid of judgment, he contradicts himself whenever he endeavours to combine facts, or judge of their mutual relations. As the Mexicans were not acquainted with the use of clepsydras, which are of very

high antiquity\* in Chaldea and China, they could not exactly mark the moment of midnight. Besides, the cosmical setting of the Pleiades was also considered, throughout the whole of Asia, as an indication of the beginning of winter†. We should look in vain for rigorous exactness in popular traditions, which perhaps took rise in much more northerly regions, where the cold is felt a month before the solstice.

What we have just said relative to the constellation of the Pleiades is also sufficient, to prove how far mistaken are some authors, who seem uncertain whether the year began toward the vernal equinox, or toward the winter solstice. The farther we remove from the 5th of November, the day of the achronical rising of the Pleiades, the less possible would it be, that at midnight, when this secular sacrifice was celebrated, the Mexicans should have seen this constellation near the zenith‡. Nevertheless, Torquemada, Leon, and Betancourt, believed, that the year began the 1st or 2d of February; Acosta and Clavigero, the 26th of the same month; Valades and Alva Ixtlilxochitl, the 1st and 20th of March; Gemelli and Veytia, the 10th of

\* Sext. Empir. pag. Stephan. 113. Lettre du pere Du Croz, in Souciet, Observat., Tom. 1, p. 345.

† Bailly, Astr. mod., p. 477.

‡ Gama, § 35, p. 52, note.

April. In the sixteenth century, the culmination of the Pleiades took place on the day of the vernal equinox  $3^h 8'$  *before the setting* of the Sun. It is true, that, according to an ancient tradition\*, the disappearance of this constellation at sunrise denoted formerly the day of the autumnal equinox, which supposes an observation made three thousand years before our era; but we cannot admit, that the Mexicans had received their chronology from a people, who began their year at the entrance of autumn. The concordance of dates, several astronomical phenomena, the evidence of the Spanish authors who accumulated materials without knowing the true system of the calendar, all are in favour of the system of Gama. I shall content myself with citing a single proof. The Indian historiographer Christoval del Castillo, in a manuscript work†, written in the Mexican language, and preserved at Mexico, asserts, that the five complementary days were added to the end of the month Atemoztli; which corresponds, according to the unanimous testimony of the Indian and Spanish authors, to our month of December. Torquemada says besides, that the third festival of the god of water was celebrated at the winter

\* Plin. Hist. Nat., Lib. 18, c. 25, (ed. Harduin, 1741,) Tom. 2, p. 129.

† MSS., cap. 71.

solstice, which took place towards the end of Atemoztli ; and that the cycle finished in the month of December. All these circumstances agree in placing the intercalary days a short time after the winter solstice. The fear of seeing the star of day extinguished or disappear, the ideas of sorrow and of joy expressed at the secular festival, refer rather to the period of the shortening of the days, than to that of the equinox. It is true, it was at the entrance of spring, that at Rome the pontiff took the new fire from the altar of Vesta ; and that the Persians celebrated the great festivals of the Neurouz ; but the motives\* of these festivals were different from those, that guided the Mexicans and the Egyptians in the solstitial festivals, and those in honor of Isis.

I have explained the system of the intercalation, such as it is seen in the Mexican manuscripts, such as it has been adopted by Siguenza, Clavigero, Carli, and long before them by Boulanger and Freret. According to this system, the length of the year is supposed to be 365·25 days ; whence it results, that, from the reform of the calendar in 1091, to the arrival of the Spaniards, the Mexicans must have found themselves in an error of more than three days. Now the researches which Gama made on the

\* Dupuis, *Origine des Cultes*, tom. 1, p. 156 ; tom. 2, P. 2, p. 96.



eclipses of the Sun on the 23d of February, 1477, and the 7th of June, 1481, which are indicated in the hieroglyphical annals; on several memorable periods of the conquest; and on the days, when, according to the Mexican records, the Sun passes the zenith of Tenochtitlan; seem to prove, that this error of three days did not take place; and that at the beginning of the sixteenth century, as we have before observed, the dates of the Azteck calendar were more accordant with the days of the solstices and equinoxes, than those of the Spanish calendar.

Without knowing the exact length of the year, the Mexicans would have been enabled from time to time to rectify their calendar, as they learned from gnomonic observations, that, in the first year of the cycle, the equinoxes of spring and autumn were some days distant from 7 malinalli, and from 9 cozcaquauhtli. The Peruvians of Cuzco, whose year was lunar, regulated their intercalation, not by the shadow of gnomons, which they however very assiduously measured, but by marks placed in the horizon, to denote where the Sun rose and set on the days of the solstices and equinoxes. A periodical and exact intercalation, such as that which has been known by the Persians since the eleventh century, is no doubt preferable to those sudden changes, which are denoted by the title of *reforms* of the calendar; but a nation, which for

ages should employ a very imperfect mode of intercalation, might nevertheless maintain harmony between its calendar, and that of the most civilized people, if, led by direct observation of the heavenly bodies, it changed at times the beginning of its year. The Mexican history, in its annals, offers no trace of such sudden changes, or extraordinary intercalations. Since the celebrated epoch of the sacrifice of Tlalixco, the calendar had undergone no reform, the intercalation was uniformly made at the end of each cycle; and to explain how four centuries had not been sufficient to produce a perceptible error in the chronology, Mr. Gama admits, that the Mexicans intercalated only twenty-five days every cycle of a hundred and four years, *cehuetiliztli*, or twelve days and a half at the end of each cycle of fifty-two years, which fixes the duration of the year to 365.24 days. He thinks himself enabled to conclude from the statement even of the historians of the sixteenth century, that the secular festival was celebrated day and night alternately; and that, if the years of a cycle began all at midnight, those of another began all at noon. Unable to examine the works written in the Mexican language, I cannot decide on the contrary of Mr. Gama's opinions. The reasons which he alleges in his dissertation on the monuments discovered in 1790, appear to me less conclusive, since I have been enabled to

examine more thoroughly the Mexican calendar. When his heirs shall have obtained the means of publishing his treatise on the Tolteck and Azteck chronology, it will be more easy to judge of the real number of the intercalary days. Gama's astronomical labours, the exactness of which we have had an opportunity of verifying, ought to inspire great confidence ; and it is probable, that a scientific person, who has had the patience to calculate for the parallel of the ancient Tenochtitlan, according to the tables of Mayer, a great number of eclipses of the Sun, connected with historical epochas, would not have lightly hazarded a new hypothesis, had he not been led to it by a careful comparison of dates, and by the study of hieroglyphical paintings.

“ The intercalation of twenty-five days in a hundred and four years,” says Mr. La Place \*, “ supposes a more exact duration of the tropical years than that of Hipparchus, and, what is very remarkable, almost equal to the year of the astronomers of Almamon. When we consider the difficulty of attaining so exact a determination, we are led to believe, that it is not the work of the Mexicans, and that it has reached them from the Old Continent ; but from what people, and by what means, was it received ? Why, if it was transmitted to them from the north of Asia, is

\* *Expo. du Système du Monde*, 3d ed., tom. 2, p. 818.

their division of time so different from those, which have been used in that part of the world?" In our present state of knowledge, we must not flatter ourselves, that we can solve these questions ; but even not admitting the intercalation of twelve days and a half in a cycle, and not granting to the Mexicans the knowledge of the ancient Persian year of 365·25 days, we shall find in the hieroglyphics of the days, and in the employment of the periodical series, irrefragable testimony of an ancient communication with eastern Asia.

Though the Mexican cycle began by the year of the rabbit, *tochtli*, as the Tartar cycle begins by the year of the rat, *singueri*, the intercalation took place only in the year *ome acatl*. This very circumstance induced the Mexicans, to denote in their paintings a *xiuhmolpilli*, or cycle of fifty-two years, by a bundle of canes. The Mexicans had migrated from Aztlan in the year 1064, or 1 *tecpatl* ; their migrations lasted twenty-three years, till 1087, or 2 *acatl*, when they arrived at Tlalixco. Now, though the reform of the calendar took place in 1090, or the year 1 *tochtli*, the festival of the new fire was nevertheless celebrated only in the following year 2 *acatl* ; because, says the Indian historian, Tezozomoc, " the tutelary god of the nation, Huitzilopochtli, had made his first appearance the day 1 *tecpatl* of the year 2 *acatl*."



Some writers have suspected, that the Mexicans, before the reform of the calendar of Tlalixco, had intercalated a day every four years. A festival of the god of fire (Xiuhteuctli), celebrated with more solemnity in the year which bore the symbol *tochtli*, seems to have given rise to this opinion. Count Carli, whose American Letters exhibit a singular mixture of just observations, of ingenious ideas, of mere sportive notions, and of things incompatible with the principles of sound philosophy, and the true system of the motions of the heavenly bodies, imagines, that he has discovered, in the festivals of nine days, celebrated every four years, the remains of a lunar intercalation. He supposes, that the Mexican priests computed in a year twelve lunations of twenty-nine days, eight hours; and that to bring back, every four years, these years of three hundred and fifty-two days to real lunar years, they added nine days. This supposition is almost as vague as that of the same writer, when he attributes to the celestial bodies the mistake of the ancient calendars, in admitting that, some thousands of years before our era, the Earth finished its revolution round the Sun in three hundred and sixty days\*, and that a lunar month was only twenty-seven days and a half.

\* Lettres Americaines, tom. 2, p. 153, 161, 167, 333, and 371.



As a periodical series of four terms was employed to distinguish the years contained in a cycle, the Mexicans were very naturally led to quadrennial festivals. Such was the solemn fast of one hundred and sixty days, celebrated at the spring equinox, in the petty republics of Tlascalla, Cholula, and Huetxocingo; and the horrible sacrifice, which took place every four years at Quauhltlan, in the month of itzcalli, when the penitents scarified their bodies, letting the blood run along reeds thrust into their wounds\*, and hanging up these reeds in the temple, as public marks of their devotion. These festivals, which remind us of the acts of penitence at Thibet and in the Indies, were repeated each time that the same sign presided over the year.

On opening, at Rome, the Codex Borgianus of Veletri, I there found the curious passage†, from which the Jesuit Fabrega concluded, that the Mexicans had knowledge of the real duration of the tropical year. Twenty cycles of fifty-two years, or one thousand and forty years, are there indicated in four pages: at the end of this great period, we see the sign rabbit, *tochtli*, immediately precede, among the hieroglyphics of the days, the bird, *cozquauhtli*; so that seven

\* Gomara, p. 131. Torquemada, tom. 2, p. 307. Gemelli, tom. 6, p. 75.

† Cod. Borg. fol. 48—63. Fabrega, MSS. fol. k, p. 7.

days are suppressed, those of *water*, the *dog*, the *ape*, *grass* (*malinalli*), the *cane*, the *tiger*, and the *eagle*. P. Fabrega supposes, in his manuscript commentary, that this omission refers to a periodical reform of the Julian intercalation, because a subtraction of seven days, at the end of a cycle of one thousand and forty years, reduces, by an ingenious method, a year of 365·25 days to a year of 365·243 days, which is only 1' 26", or 0·001 of a day, greater than the real mean year, as it is laid down in the tables of Mr. Delambre. After the examination of a great number of hieroglyphic paintings of the Mexicans, and having seen the extreme care with which they are executed in the minutest details, we cannot admit, that the omission of seven terms in a periodical series is owing to mere chance. Fabrega's observation without doubt deserves notice here; not that it is probable, that a nation should in reality employ a reform of the calendar only after long periods of a thousand and forty years; but because the manuscript of Veletri seems to prove, that its author was acquainted with the real duration of the years. If at Mexico, on the arrival of the Spaniards, an intercalation of twenty-five days in one hundred and four years existed, it is to be supposed, that this more perfect intercalation was preceded by an intercalation of thirteen days in fifty-two years. Now the remembrance of

this ancient method would have been preserved ; and it is possible, that the Mexican priest, who composed the ritual in the Borgian Museum, meant to indicate in his book a contrivance of calculation adapted to rectify the ancient calendar, by retrenching seven days from a great period of twenty cycles. We shall be able to judge of the propriety of this opinion, only when a greater number of Mexican paintings shall have been consulted in Europe and in America ; for I cannot too often repeat, that all that we have hitherto learnt respecting the ancient state of the natives of the New Continent is nothing, in comparison with the light which will be one day thrown on this subject, if we succeed in bringing together the materials now scattered over both worlds, that have survived the ages of ignorance and barbarism.

The valuable monument represented in plate 23d, which had been already engraved at Mexico twenty years ago, confirms a part of the ideas we have just unfolded respecting the Mexican calendar. This immense stone was found in the month of December, 1790, in the foundations of the great temple of Mexitli, in the great square of Mexico, nearly seventy metres to the west of the second gate of the Viceroy's palace, and thirty metres north of the flower market, called *Portal de las flores*, at the small depth of five decimetres. It was so placed, that the sculp-

tured part could be seen only by putting it in a vertical position. When Cortez destroyed the temples, he broke the idols, and every thing that belonged to the ancient rites. Those masses of stone, which were too large to be destroyed, were buried, in order to conceal them from the eyes of a vanquished people. Though the circle, which contains the hieroglyphics of the days, is only three metres four decimetres in diameter, we found, that the whole stone formed a rectangled parallelopipedon of four metres length, as many metres broad, and one metre thick.

The nature of this stone is not calcareous, as Mr. Gama asserts; it is a blackish gray trappean porphyry, with basis of basaltic *wakke*. On carefully examining some detached fragments, I perceived hornblende, several very slender crystals of vitreous feldspar, and, what is very remarkable, sprinklings of mica. This rock, cracked and full of small cavities, is destitute of quartz, like almost all rocks of trappean formation. As its actual weight is more than twenty-four tuns, and no mountain within eight or ten leagues of the city could furnish a porphyry of this grain and color, we may easily imagine the difficulties, which the Mexicans must have found in transporting so enormous a mass to the foot of the Teocalli. The sculpture in relief is as well polished as any other to be found in Mexican works; the concentric circles, the



numerous divisions and subdivisions, are traced with mathematical precision ; the more minutely the detail of this sculpture is examined, the greater taste we find in the repetition of the same forms, that attention to order and feeling of symmetry, which among half civilized nations is a substitute for the feeling of the beautiful.

In the centre of the stone is sculptured the celebrated sign *nahui ollin Tonatiuh* (the Sun in his four motions), of which we have already spoken. The Sun is surrounded by eight triangular radii ; which are also found in the ritual calendar *tonalamatl*, in historical paintings, and wherever there is a representation of the Sun, *Tonatiuh*\*. The number eight alludes to the division of the day and the night into eight parts†. The god Tonatiuh is figured opening his large mouth, armed with teeth ; this yawning mouth, and protruded tongue, remind us of the figure of a divinity of Hindostan, the image of *Kala, Time*. According to a passage of the Bhagvat-Gheeta, Cala “ swallows the worlds, opening a fiery mouth, exhibiting a row of dreadful teeth, and protruding an enormous tongue‡.” Tonatiuh, placed among the signs of the days, measuring

\* Pl. 15, n. 4, (Cod. Borg. Veletr., fol. 49).

† See p. 282.

‡ Wilkins's Translation. See also the Hindu Pantheon, art. *Kāla*.



the year by the *four movements* of the solstices and the equinoxes, is in fact the real symbol of time ; it is *Krishna* assuming the form of *Kâla*, it is Chronos devouring his children, whom we imagine we find under the name of Moloch among the Phœnicians.

The inner circle contains the twenty signs of the days ; recollecting that *cipactli* is the first, and *xochitl* the last of these asterisms, we here, as elsewhere, perceive, that the Mexicans arranged the hieroglyphics from right to left. The heads of the animals are placed in an opposite direction, no doubt because the animal, which turns his back to another, is supposed to precede it. Mr. Zoega observed this peculiarity among the Egyptians\*. The death's head, *mi-quiztli*, placed near the serpent, and accompanying it as a sign of the night in the third periodical series, is an exception to the general rule ; this alone is directed toward the last sign, while the animals have their faces turned toward the first. This arrangement is not the same in the manuscripts at Veletri, Rome, and Vienna.

It is probable, that the sculptured stone, which Mr. Gama has endeavoured to explain, was anciently placed in the enclosure of the teocalli, in a *sacellum* dedicated to the sign *ollin*

\* Zoega, de Obel., p. 464 ; where, by an error of the press, the words *dextrorsum* and *sinistrorsum* are confounded with each other.

*Tonatiuh*. We know by a fragment of Hernandez, preserved by the Jesuit Nieremberg in the eighth book of his Natural History, that the great teocalli contained within its walls six times thirteen or seventy-eight chapels, several of which were dedicated to the Sun, the Moon, the planet Venus, called *Ilcuicatitlan* or *Tlazolteotl*, and to the signs of the zodiac\*. The Moon, considered by all nations as the planet that attracts humidity, had a small temple (*teccizcalli*) built in shell work. The great festivals of the Sun (*Tonatiuh*) were celebrated at the winter solstice, and in the sixteenth period of thirteen days, over which presided both the sign *nahui ollin Tonatiuh*, and the milky way, known under the name of *Citlalinycue*, or *Citlalcueye*. During one of these festivals of the Sun, the kings were wont to withdraw into an edifice, built in the midst of the enclosure of the teocalli, and called *Hueyquauhxiccalco*. They passed four days in fasting and penitence; a bloody sacrifice was afterward offered in honor of the eclipses (*Netonatiuhqualo*, the *unfortunate Sun devoured*). In this sacrifice one of two masked victims represented the Sun, *Tonatiuh*, the

\* Eusebii Nierembergii Hist. Nat., lib. 8, cap. 22, (Antwerpiae, 1635, page 142—156). Templi partes, 3, 8, 9, 20, 25.

other, the Moon, *Meztli*, as emblems to show, that the Moon is the real cause of the eclipse of the Sun.

Beside the asterisms of the Mexican zodiac, and the figures of the sign *nahui ollin*, the stone gives also the dates of ten great festivals, which were celebrated from the spring to the autumnal equinox. As several of these festivals were correspondent with celestial phenomena, as the Mexican year is vague during the space of a cycle, and as the intercalation takes place only every fifty-two years, the same dates do not denote four years successively the same days. The winter solstice, which, the first year of the cycle, took place on the day 10 *tochtli*, retrograded two signs eight years later, and fell on the day 8 *miquiztli*. Hence it follows, that, in order to indicate the dates by the signs of the days, we must add the year of the cycle with which these dates correspond. In fact the sign 13 *canes*, or *matlactly omeiy acatl*, placed above the figure of the Sun, toward the upper edge of the stone, shows, that this monument contains the *fasti* of the twenty-sixth year of the cycle, from the month of March to the month of September.

In order to give a clearer view of the signs, which indicate the festivals of the Mexican religion, I must again observe, that the rounds

placed near the hieroglyphics of the days are terms of the first of the three periodical series, of which we have already explained the use. Reckoning from right to left, and beginning at the right of the triangle resting on the forehead of the god, *Ollin Tonatiuh*, with the point toward *cipactli*, we find the eight following hieroglyphics : 4 *tiger* ; 1 *silex* ; *tletl*, fire, without marking the number ; 4 *wind* ; 4 *rain* ; 4 *ram* ; 2 *ape* ; and 4 *water*. We now come to the explanation of the Mexican festivals, according to the calendar of Mr. Gama, and the order of the festivals indicated in the works of the historians of the sixteenth century.

In the year 13 *acatl*, which is the last year of the second indiction of the cycle, the beginning of the year retrograded six days and a half, because the intercalation had not taken place for twenty-six years. The first day of the month *tititl*, which bears the sign, 1 *cipactli tletl*, consequently corresponds not to the 9th but the 3d of January ; and the sign, which presides over the seventh period of thirteen days, 1 *quiahuitl*, or 1 *rain*, coincides with the 22d of March, or with the vernal equinox. It is at this period, that the festivals of *Tlaloc*, or the god of water, were celebrated ; which indeed had already begun ten days before the equinox, on the day 4 *atl*, or 4 *water* ; without doubt, because on the 12th of March, or the 3d of the month *Tlacaxi-*



*pehualiztli*, the hieroglyphic of water, *atl*, was the sign\* both of the day and of the night. Three days after the vernal equinox, the day 4 *ehecatli*, or 4 wind, began a solemn fast of forty days, in honour of the Sun. This fast finished on the 30th of April, which corresponds to 1 *tecpatl*, or 1 flint. As the sign of this day is accompanied by the Lord of the Night *tletl*, fire, we find the hieroglyphic *tletl*, placed near the 1 *tecpatl*, on the left of the triangle, the point of which is directed toward the beginning of the zodiac. At the right of the sign 1 *tecpatl* is 4 *ocelotl*, or 4 tiger, this day is remarkable from the passage of the Sun through the zenith of the city of Mexico. The whole of the small period of thirteen days, in which this passage takes place, and which is the eleventh of the ritual year, was dedicated to the Sun. The sign 2 *ozomathi*, or 2 ape, corresponds to the epocha of the summer solstice, it is placed immediately near 1 *quiahuitl*, or 1 rain, the day of the equinox.

We might be puzzled to explain 4 *quiahuitl*, or 4 rain. In the first year of the cycle, this day corresponded exactly to the second passage of the Sun through the zenith of the city of Mexico; but in the year 13 *acatl*, the fasti of which are found in this monument, the day 4

\* Nabui atl, atl, atl; see above, p. 316.



rain preceded this passage six days. As the whole period of thirteen days, in which the Sun reaches the zenith, is dedicated to the sign *ollin Tonatiuh*, and the milky way, *citlalcueye*; and as the day 4 rain constantly belongs to this same period; it seems probable, that the Mexicans indicated this last day in preference, in order that the figure of the Sun should be surrounded by four signs, which had all the same number four; and particularly to form an allusion to the four destructions of the Sun, which tradition places in the days 4 tiger, 4 wind, 4 water, and 4 rain. The five small rounds, which are found on the left of the day 2 ape, immediately above the sign *malinalli*, seem to allude to the festival of the god *Macuil-Malinalli*, who had particular altars; this festival was celebrated about the 12th of September, called *Macuilli Malinalli*. The point of the triangle, which separates the sign of the day, 1 silex, from the sign of the night, *tletl*, or fire, is directed towards the first of the twenty asterisms of the signs of the zodiac, because, in the year 13 canes, the day 1 *cipactli* corresponds to the day of the autumnal equinox: about this time was celebrated a festival of ten days, the most solemn of which was the day 10 *Ollin*, or 10 Sun, which corresponds to our 16th of September. It is believed at Mexico, that the two compartments placed under the tongue

of the god Ollin Tonatiuh present twice the number five; but this explanation appears to me as doubtful, as that which has been attempted to be given of the forty compartments surrounding the zodiac, and of the numbers 6, 10, and 18, which are repeated toward the edge of the stone. We shall not examine whether the holes made in this enormous stone were made, as Mr. Gama thought, to place wires to serve as gnomons. What is more certain, and highly important to Mexican chronology, is, that this monument proves, in opposition to the opinion of Gemelli and Boturini, that the first day, whatever be the sign of the year, is constantly presided by *cipactli*, a sign which corresponds to the capricorn of the Greek sphere. We may suppose, that near this stone another was placed, which contained the fasti from the autumnal equinox to that of the spring.

We have now collected under the same point of view all that is hitherto known of the division of time among the Mexican nations, carefully distinguishing what is certain from what is merely probable. We see from what has been explained respecting the form of the year, how imaginary are those hypotheses, by which sometimes the lunar years, sometimes years of two hundred and eighty-six days divided into twenty-two months, have been attributed to the Tol-

tecks and the Aztecks\*. The knowledge of the system of the calendar followed by the most northerly nations of America and Asia would be highly interesting. Among the inhabitants of Nootka, we still find the Mexican months of twenty days; but their year has only fourteen months, to which they add, by very complex methods, a great number of intercalary days†. When a nation does not regulate the subdivisions of the year after the same lunations, the number of months becomes very arbitrary, and its choice seems to depend only on a particular predilection for certain numbers. The Mexican nations preferred the double decads, because they had simple signs only for the units, for twenty, and for the powers of twenty.

The use of periodical series, and the hieroglyphics of the day, have exhibited striking analogies between the nations of Asia and those of America. Some of these examples have not escaped the penetration of Mr. Dupuis‡, though he has confounded the signs of the months with those of the days, and had but a very imperfect knowledge of the Mexican chronology. It would be contrary to the end we have proposed

\* Waddilove, in Robertson's *Hist. of America*, vol. 3, p. 404, note 35.

† Don Joze Mozinno, *Viage a Noutka*, M. S. (See my *Essai Politique*, vol. i. p. 335).

‡ *Memoire explicatif sur le Zodiaque*, p. 99.

to ourselves in this work, to dwell on theories respecting the ancient civilization of the inhabitants of the north, and of the centre of Asia. Thibet and Mexico offer analogies sufficiently remarkable in their ecclesiastical hierarchy, in the number of religious assemblies, in the severe austerity of their penitentiary rites, and in the order of their processions. It is impossible not to be struck with this resemblance, in reading with attention the recital, which Cortez made the Emperor Charles V, of his solemn entrance into Cholula, which he calls the holy city of the Mexicans.

A people who regulated its festivals according to the motion of the stars, and who engraved its *fasti* on a public monument, had no doubt reached a degree of civilization superior to that which has been allowed by Pauw, Raynal, and even Robertson, the most judicious of the historians of America. These writers consider every state of society as barbarous, that did not bear the type of civilization, which they, according to their systematic ideas, had formed. We cannot admit these abrupt distinctions into barbarous and civilized nations. After having examined in this work with scrupulous impartiality whatever we ourselves have been able to discover respecting the ancient state of the nations of the New Continent, we have endeavoured to combine the features by which they are immediately



characterized, and those by which they seem to be connected with different groups of Asiatics. The state of nations and of individuals is the same: as, in the latter, the whole faculties of the mind unfold themselves but gradually, so, in the former, the progress of civilization does not manifest itself at once in the melioration of public and private manners, in a taste for the arts, and in the form of general institutions. Before we class nations, we should study them according to their specific characters, since external circumstances may give an infinite variety to the shades of civilization, which distinguish tribes of a different race; especially when, fixed in regions far remote from each other, they have long lived under the influence of governments and religious rites hostile to the progress of the mind, and to the preservation of individual liberty.



# CORRESPONDENCE

OF

## ENGLISH WEIGHTS AND MEASURES

WITH THOSE USED IN FRANCE.

### NEW FRENCH WEIGHTS AND MEASURES.

#### I.—MEASURES OF LENGTH.

*The Metre being at 30° and the Foot at 62°.*

		English Inches.				
Millimetre	=	·03937				
Centimetre	=	·39371				
Decimetre	=	3·93710				
Metre	=	39·37100	Mil.	Fur.	Yds.	Feet. In.
Decametre	=	393·71000	= 0	0	10	2 9·7
Hecatometre	=	3937·10000	= 0	0	109	1 1
Kilometre	=	39371·00000	= 0	4	213	1 10·2
Myriometre	=	393710·00000	= 6	1	156	0 6

#### II.—MEASURES OF CAPACITY.

		Cubic Inches.				
Millilitre	=	·06103				
Centilitre	=	·61028				
Decilitre	=	6·10280	Tons.	Hogs.	Wine G.	Pints.
Litre	=	61·02800	= 0	0	0	2·1133
Decalitre	=	610·28000	= 0	0	2	5·1352
Hectolitre	=	6102·80000	= 0	0	26·419	
Kilolitre	=	61028·00000	= 1	0	12·19	
Myriolitre	=	610280·00000	= 10	1	58·9	

## III.—WEIGHTS.

		English Grains.					
Milligramme	=	·0154					
Centigramme	=	·1544					
Decigramme	=	1·5444					
Gramme	=	15·4440	Pound.		AVOIRDUPOIS.		
				Oun.		Dram.	
Decagramme	=	154·4402	=	0	0	5·65	
Hecatogramme	=	1544·4023	=	0	3	8·5	
Kilogramme	=	15444·0234	=	2	3	5	
Myriogramme	=	154440·2344	=	22	1	2	



## IV.—ANCIENT PARIS MEASURES.

The French toise.....	=	6·3945	English feet.
The Paris foot of 12 in.	=	12·7977	} English inches.
The inch .....	=	1·0664	
The line, or 1-12th of an in.	=	·0888	
The 12th of a line .....	=	·0074	

END OF VOL. XIII.



**RESEARCHES,**  
*Concerning*  
**THE INSTITUTIONS & MONUMENTS**  
 OF  
**the Ancient Inhabitants**  
 OF  
**AMERICA,**  
*with Descriptions & Views*  
 OF SOME OF THE MOST  
**Striking Scenes**  
*in the*  
**CORDILLERAS!**  
*Written in French by*  
**ALEXANDER DE HUMBOLDT,**  
*& Translated into English by*  
*Helen Maria Williams.*  
 VOL. II.

Plate 6.

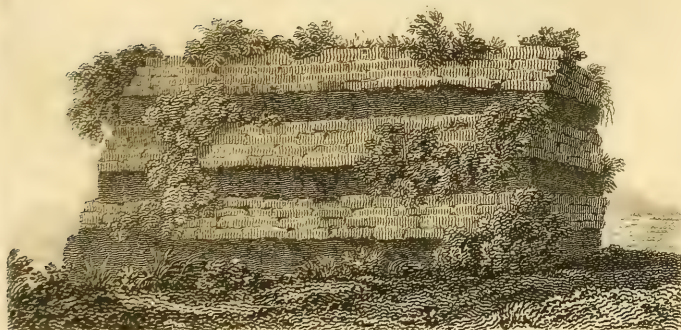


plate vol. 2.

DETACHED MASS OF THE PYRAMID OF CHOLULA.

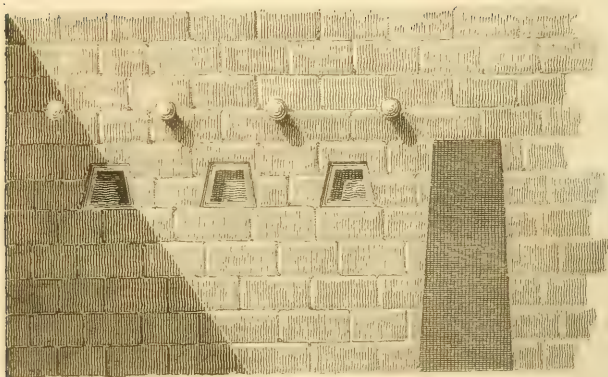
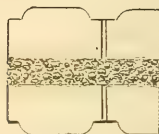
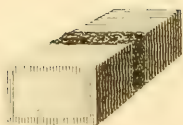
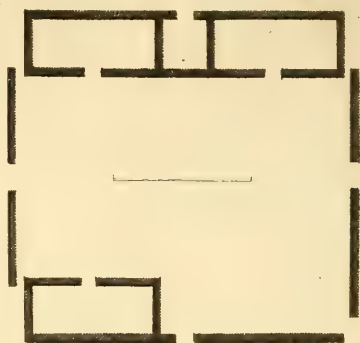
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*House of the Inca, at Cuzco*

# HOUSE OF THE INCA AT CALLO,

IN THE

'KINGDOM OF QUITO.

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PLATE XXIV.

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WHEN Tupac-Yupanqui and Huayna-Capac, father of the unfortunate Atahualpa, had completed the conquest of the kingdom of Quito, they not only caused magnificent roads to be formed on the ridge of the Cordilleras, but, in order to facilitate the communications between the capital and the most northerly provinces of their empire, they ordered their inns (*tambos*), magazines, and houses, for the prince and his suite, should be built on the road from Cuzco to Quito, at regular distances. These *tambos*, and houses of the Inca, to which other travellers have given the name of palaces, existed during several ages in that part of the great road which leads from Cuzco to Caxamarca. The country is indebted to the last conquerors of the race of Manco-Capac only for the construction of those

edifices, of which we now find the ruins from the province of Caxamarca, the southern limit of the ancient kingdom of Quito, as far as the mountains of Los Pastos. Among these edifices one of the most celebrated, and the best preserved, is that of Callo, or *Caio*, described by La Condamine, Don Jorge Juan, and Ulloa, in their travels to Peru. The descriptions of those travellers are very imperfect; and the drawing of the house of the Inca, made by Ulloa, is so unlike the plan on which it was really constructed, that we are almost tempted to think it is merely imaginary.

In the month of April, 1802, in an excursion to the volcano of Cotopaxi, M. Bonpland and myself visited these slight remains of Peruvian architecture, and I sketched the edifice represented in the 24th plate. On my return to Quito, I showed my sketches, and the plate contained in Ulloa's Travels, to some very old monks of the order of St. Augustin. No person was better acquainted than themselves with the ruins of Callo, which were situate on ground belonging to their convent; they formerly inhabited a country house in the neighbourhood; and they assured me, that since 1750, and even before that period, the Inca's house was always in the same state as at present. It is probable, that Ulloa wished to represent a monument *repaired*; and that he imagined the existence of inside

walls\*, wherever he saw heaps of rubbish, or accidental elevations of the ground. His plan exhibits neither the real form of the apartments, nor the four great outer doors, which must necessarily have existed from the time when the edifice was built.

We have already observed, that the elevated plain of Quito extends itself between the double ridge† of the Cordillera of the Andes; and is separated from the plain of Llactacunga and Hambato by the heights of Chisinche and Tio-pullo, which, like a dyke, extend crossways from the eastern to the western ridge, or from the basaltic rocks of Ruminnahui toward the slender pyramids of the ancient volcano of Ilinis-sa. From the top of this dyke, which divides its waters between the Pacific and Atlantic Oceans, we discover, in an immense plain covered with pumice stone, the Panecillo of Callo, and the ruins of the house of the Inca Huayna Capac. The Panecillo, or sugar-loaf, is a conic hillock, about fourscore metres high, covered with small bushes of molina, spermacoce, and cactus. The natives are persuaded that this hillock, which resembles a bell, and is perfectly regular in its figure, is a tumulus, or one of those numerous

\* Historical Journey to South America, vol. 1, p. 387, pl. 18.

† See vol. 13, p. 231, and my Collection of Astronomical Observations, vol. 1, p. 309.



hills, which the ancient inhabitants of this country raised for the interment of the sovereign, or some other distinguished personage. It is alleged, in favour of this opinion, that the Panecillo is wholly composed of volcanic rubbish; and that the same pumice stone, which surrounds its basis, is found also on its summit.

This reason might appear little conclusive in the eyes of a geologist; for the back of the neighbouring mountain of Tiopullo, which is much higher than the Panecillo, is covered also with great heaps of pumice stone, probably owing to ancient eruptions of Cotopaxi and Ilinissa. We cannot doubt, but that in both Americas, as well as in the north of Asia, and on the banks of the Boristhenes, mounds raised by men, and real tumuli of an extraordinary height, are to be seen. Those which are found amid the ruins of the ancient town of Mansiche, in Peru, are not much lower than the sugar-loaf of Callo. It is nevertheless possible, and this opinion even appears to me the most probable, that the latter is a volcanic hillock, isolated on the vast plain of Llactacunga, and to which the natives have given a more regular form. Ulloa, whose authority is of great weight, seems to have adopted the opinion of the natives: he even thinks, that the Panecillo is a military monument; and that it served as a watch tower, to discover what passed in the country, and to ensure the prince's safety

on the first alarm of an unforeseen attack. In the state of Kentucky we equally observe, near ancient fortifications of an oval form, very lofty tumuli, containing human bones, and covered with trees, which Mr. Cutter supposes to be a thousand years old\*.

The Inca's house is a little to the south-west of the Panecillo, three leagues distant from the crater of Cotopaxi; and about ten leagues to the south of the city of Quito. This edifice forms a square, each side of which is thirty metres long; four great outer doors are still distinguishable, and eight apartments, three of which are in good preservation. The walls are nearly five metres high and one thick. The doors, similar to those of the Egyptian temples; the niches, eighteen in number in each apartment, distributed with the greatest symmetry; the cylinders for the suspension of warlike weapons; the cut of the stones, the outer side of which is convex, and carved obliquely, all remind us of the edifice at Cannar, which is represented in the twentieth plate. I saw nothing at Callo of what Ulloa calls grandeur and majesty: but what appears to me much more interesting is the uniformity of construction, which is observed in all the Peruvian monuments. It is impossible to examine attentively a single edifice of the time of

\* Carey's Pocket Atlas of the United States, 1796, p. 101.

the Incas, without recognising the same type in all the others that cover the ridge of the Andes, on an extent of more than four hundred and fifty leagues, from a thousand to four thousand metres above the level of the ocean. It might be said, that a single architect constructed this great number of monuments, so strictly were this people of mountaineers attached to their domestic habits, their civil and religious institutions, and the form and distribution of their buildings. It will be easy in some future day to ascertain from the drawings contained in this work, whether buildings exist in Upper Canada, as the learned author of the *Noticias Americanas* asserts, which in the cut of their stones, the form of their doors and small niches, and the distribution of their apartments, display traces of the Peruvian style; and this inquiry is so much the more interesting to those, who devote themselves to historical researches, as we know from sure testimony, that the Incas built the fortress of Cuzco after the model of the most ancient edifices of Tiahuanaco, situate in 17° 12' south latitude.

The stone made use of for the house of Huayna-Capac, mentioned by Cieça\* under the name of *aposentos de Mulahalo*, is a rock of volcanic origin, a burnt and spongy porphyry with basaltic basis. It was probably ejected by

\* *Chronica del Peru*, cap. 41 (ed. de 1554, p. 108).

the mouth of the volcano of Cotopaxi, for it is the same with the enormous blocks, which I found in great numbers on the plains of Callo and Mulalo. As this monument appears to have been constructed in the beginning of the 16th century, the materials employed in it prove, that it is a mistake to consider as the first eruption of the Cotopaxi that which took place in 1533, when Sebastien de Belalcazar made the conquest of the kingdom of Quito. The stones of Callo are cut in parallelopipedons, not all of the same size, but forming courses as regular as those of Roman workmanship. If the illustrious author of the History of America\* could have seen a single Peruvian edifice, he certainly would not have asserted, "that the Indians took the stones just as they were raised out of the quarries; that some were triangular, some square, some convex, some concave:" and that the too highly vaunted art of this people consisted only in the arrangement of these shapeless materials.

During our long abode in the Cordilleras of the Andes, we never found any structure resembling that which is termed Cyclopean. In every edifice that dates from the time of the Incas, the front of the stones is very skilfully cut, while the back part is rugged, and often angular. An excellent observer, Don Juan Larea, has

\* Robertson, Hist. of America, vol. 3, p. 432.

remarked, that, in the walls at Callo, the interstices between the outer and inner stones are filled with small pebbles cemented with clay. I did not observe this circumstance ; but I have represented it in the 23d plate, from a sketch of Mr. Larea's. We see no vestige of floor, or roof ; but we may suppose, that the latter was of wood. We are also ignorant, whether the edifice had originally more than a single story, or not ; as the height of its walls has been diminished no less by the avidity of the neighbouring peasantry, who take away the stones for their own use, than by the earthquakes, to which this unfortunate country is continually exposed.

It is probable, that the edifices, which I have heard called at Peru, Quito, and as far as the banks of the river of Amazons, by the name of *Inga-Pilca*, or buildings of the Inca, do not date farther back than the 13th century. Those of Vinaque and Tiahuanaco were constructed at a remoter period ; as were the walls of unbaked bricks, which owe their origin to the ancient inhabitants of Quito, the *Puruays*, governed by the *conchocando*, or king of Lican, and by *guastays*, or tributary princes. It were to be wished, that some learned traveller could visit the banks of the great lake of Titicaca, the province of Collao, and more especially the elevated plain of Tiahuanaco, which is the centre of an ancient civilization in South America. On that



spot there still exist some remains of those edifices, which Pedro de Cieça \* has described with great simplicity; they seem never to have been finished, and, at the arrival of the Spaniards, the natives attributed the construction of them to a race of white and bearded men, who inhabited the ridge of the Cordilleras long before the foundation of the empire of the Incas. American architecture, we cannot too often repeat, can cause no astonishment, either by the magnitude of its works, or the elegance of their form; but it is highly interesting, as it throws light on the history of the primitive civilization of the inhabitants of the mountains of the new continent.

I have sketched, 1st, the plan of the Inca Huayna-Capac's house: 2d, a part of the inner wall of the most northerly apartment, seen on the inside: 3d, the same part seen on the outside, but within the court. In the external walls, opposite the doors of the apartments, we find, instead of niches, openings looking to the adjacent country. I shall not decide, whether these windows were originally niches (*hocos*), and opened in times subsequent to the conquest, when this edifice served as a dwelling to some Spanish family. The natives on the contrary believe, that they were made for the purpose of observing, whether an enemy would attempt an attack against the Inca's troops.

\* Cieça, cap. 105, p. 255.

## CHIMBORAZO.

SEEN FROM THE

### *PLAIN OF TAPIA.*

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PLATE XXV.

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THE mountain is here sketched as it displays itself from the arid plain of Tapia, near the village of Lican, the ancient residence of the sovereigns of Quito, before the conquest of the Inca Tupac-Yupanqui. From Lican to the summit of Chimborazo is nearly five leagues in a straight line. The 16th plate represents this colossal mountain surrounded with a zone of perpetual snow, which, near the equator, maintains itself at four thousand eight hundred metres above the level of the sea. The 25th plate represents Chimborazo as we saw it after very heavy falls of snow, on the 24th of June, 1802, the day immediately following that of our excursion toward the summit. It appeared to me interesting, to give a precise idea of the stupendous

aspect of the Cordilleras, at the two epochas of the *maximum* and *minimum* of the height of the snows.

Travellers who have approached the summits of Mont Blanc and Mont Rose are alone capable of feeling the character of this calm, majestic, and solemn scenery. The bulk of Chimborazo is so enormous, that the part which the eye embraces at once near the limit of the eternal snows is seven thousand metres in breadth. The extreme rarity of the strata of air, across which we see the tops of the Andes, contributes\* greatly to the splendour of the snow, and the magical effect of its reflection. Under the tropics, at a height of five thousand metres, the azure vault of the sky appears of an indigo tint†. The outlines of the mountain detach themselves from the sky in this pure and transparent atmosphere, while the inferior strata of the air, reposing on a plain destitute of vegetation, which reflects the radiant heat, are vaporous, and appear to veil the middle ground of the landscape.

The elevated plain of Tapia, which extends to the East as far as the foot of the Altar and of Condorasto, is three thousand metres in height, nearly equal to that of Canigou, one of the highest summits of the Pyrenees. A few plants

\* Political Essay on New Spain, vol. 1, p. 77.

† See my Geography of Plants, p. 17.

of schinus molle, cactus, agave, and molina, are scattered over the barren plain : and we see in the foreground lamas (*camelus lacma*) sketched from nature, and groups of Indians going to the market of Lican. The flank of the mountain presents that gradation of vegetable life, which I have endeavoured to trace in my chart of the Geography of plants, and which may be followed on the western top of the Andes from the impenetrable groves of palm trees to the perpetual snows, bordered by thin layers of lichens.

At three thousand five hundred metres absolute height, the ligneous plants with coriaceous and shining leaves nearly disappear. The region of shrubs is separated from that of the grasses by alpine plants, by tufts of nerteria, valerian, saxifrage, and lobelia, and by small cruciferous plants. The grasses form a very broad belt, covered at intervals with snow, which remains but a few days. This belt, called in the country the *pajonal*, appears at a distance like a gilded yellow carpet. Its colour forms an agreeable contrast with that of the scattered masses of snow ; and is owing to the stalks and leaves of the grasses burnt by the rays of the sun in the seasons of great draught. Above the *pajonal* lies the region of cryptogamous plants, which here and there cover the porphyritic rocks destitute of vegetable earth. Farther on, at the limit

of the perpetual ice, is the termination of organic life.

However stupendous the height of Chimborazo, its summit is four hundred metres lower than the point, at which M. Gay-Lussac, in his memorable aerial excursion, made experiments so important both to meteorology and the knowledge of the laws of magnetism. The natives of the province of Quito preserve a tradition, according to which a summit of the eastern ridge of the Andes, now called the Altar (*el Altar*), part of which fell down in the fifteenth century, was formerly loftier than Chimborazo. In Boutan, the highest mountain of which English travellers have given us the measure, the Soumounang is only 4419 metres (2268 toises) high: but, according to the assertion of Colonel Crawford \*, the loftiest summit of the Cordilleras of Thibet is above twenty-five thousand English feet, or 7617 metres (3909 toises). If this calculation be founded on an accurate measurement, a mountain of central Asia is a thousand and ninety metres higher than Chimborazo. To the eye of the real geologist, who, engaged in the study of the *formations* has been accustomed to contemplate nature in all her greatness, the absolute height of mountains is an object of little importance; nor will he be astonished, if hereafter, in

\* Jameson's System of Mineralogy, vol. 3, p. 329.



some part of the globe, a summit be discovered, the elevation of which exceeds as much that of Chimborazo, as the highest mountain of the Alps surpasses the summit of the Pyrenees.

A distinguished architect, who unites to the knowledge of the monuments of antiquity a strong feeling of the beauties of nature, Mr. Thibault, has undertaken to make the coloured drawing, the engraving of which forms the principal ornament of this work. The sketch I traced on the spot had no other merit than that of exhibiting with accuracy the outlines of Chimborazo, determined by measurements of the angles. The truly natural figure of the whole, and of its various parts, has been scrupulously preserved. In order that the eye may follow the gradation of the plans, and form an idea of the extent of the plain, Mr. Thibault has animated the scene by figures grouped with great taste. To record the services of disinterested friendship is a grateful task.





*Epochs of Nature according to the  
Aztec Mythology.*

## EPOCHAS OF NATURE,

ACCORDING TO THE

*AZTECK MYTHOLOGY.*


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 PLATE XXVI.
 

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THE most prominent feature among the analogies observed in the monuments, the manners, and traditions of the people of Asia and America, is that which the Mexican mythology exhibits in the cosmogonical fiction of the periodical destructions and regenerations of the world. This fiction, which connects the return of the great cycles with the idea of the renewal of matter, deemed indestructible; and which attributes to space what seems to belong only to time\*, goes back to the highest antiquity. The sacred books of the Hindoos, especially the *Bhagavata Pourana*, speak of the four ages, and of the *pralayas*, or cataclysms, which at different epochas

\* Herman, *Mythologie der Griechen*, Th. 2, p. 332.

have destroyed the human race\*. A tradition of *five ages*, analogous with that of the Mexicans, is found on the elevated plain of Thibet†. If it be true, that this astrological fiction, which is become the basis of a particular system of cosmogony, originated in Indostan, it is probable also, that it passed thence by the way of Iran and Chaldea to the western nations. It cannot but be admitted, that a certain resemblance exists between the Indian tradition of the *Yugas* and the *Kalpas*, the cycles of the ancient inhabitants of Etruria, and that series of generations destroyed, which Hesiod characterizes under the emblem of four metals.

The nations of Culhua, or Mexico, says Gomara‡, who wrote about the middle of the sixteenth century, believe according to their hieroglyphical paintings, that, previous to the sun which now enlightens them, four had already been successively extinguished. These four suns are as many ages, in which our species has been annihilated by inundations, by earthquakes, by a general conflagration, and by the effect of destroying tempests. After the destruction of

\* Hamilton and Langles Catalogue of Sanskrit Manuscripts in the Imperial library, p. 13: Asiatic Researches, vol. 2, p. 171: Moor's Hindu Pantheon, p. 27 and 101.

† Georgi Alphab. Tibetanum, p. 220.

‡ Gomara, Conquista, fol. cxix.



the fourth sun, the world was plunged in darkness during the space of twenty-five years. Amid this profound obscurity, ten years before the appearance of the fifth sun, mankind was regenerated. The gods, at that period, for the fifth time, created a man and a woman. The day, on which the last sun appeared, bore the sign *tochtli* (rabbit); and the Mexicans reckon eight hundred and fifty years from this epocha to 1552. Their annals go back as far as the fifth sun. They made use of historical paintings (*escritura pintada*) even in the four preceding ages; but these paintings, as they assert, were destroyed, because in each age every thing ought to be renewed. According to Torquemada\*, this fable of the revolutions of time, and the regeneration of nature, is of Tolteck origin: it is a national tradition common to that group of people, whom we know under the name of Toltecks, Chichimecks, Acolhuans, Nahuatlacks, Tlascaltecks, and Aztecks; and who, speaking the same language, have been flowing from north to south since the middle of the sixth century of our era.

On examining, at Rome, the Codex Vaticanus, No. 3738, copied in 1566 by a Dominican monk,

\* Torquemada, vol. 1. p. 40; vol. 2, p. 63.

Pedro de los Rios \*, I found the Mexican drawing represented in plate 26. This historical document is so much the more curious, as it indicates the duration of each age by signs of which we know the meaning. In P. Rios's Commentary, the order in which the catastrophes took place is entirely confounded; the last, which is the deluge, is there considered as the first. The same error is found in the works of Gomara, Clavigero †, and the greater part of the Spanish authors; who, forgetting that the Mexicans placed their hieroglyphics from right to left, beginning at the bottom of the page, necessarily inverted the four destructions of the world. I shall point out this order, as it is represented in the Mexican paintings of the Vatican library, and described in a very curious history written in the Azteck tongue, fragments of which have been preserved by the Indian Fernando de Alvar Ixtlilxochitl ‡. The testimony of a native writer, and the copy of a Mexican painting made on the spot a short time after the conquest, merit undoubtedly more confidence than the recital of the Spanish histo-

\* See vol. 13, p. 191, and 201.

† *Storia Antica di Messico*, tom. 2, p. 57.

‡ Gama, § 62, p. 97: Boturini, *Cat. del Museo*, § 8. n. 13.

rians. This diversity, of which we have just stated the reason, relates only to the order of the destructions; for the circumstances, by which each of them was accompanied, are related in the same manner by Gomara, Pedro de los Rios, Ixtlilxochitl, Clavigero, and Gama.

*First cycle.* Its duration is  $13 \times 400 + 6 = 5206$  years. This number is indicated on the right in the lower picture by nineteen rounds, thirteen of which are surmounted by a *feather*. We have already observed, speaking of the calendar, that the hieroglyphic of the square of twenty is a feather; and that, like the nails of the Etruscans and the Romans \*, mere rounds indicated among the Mexicans the number of the years. This first age, which corresponds to the age of justice (*Sakia Youga*) of the Hindoos, was called *Tlaltonatiuh*, age of the Earth; it is also that of the giants (*Qzocuilliexequé*, or *Tuinametin*), for the historical traditions of every nation began by combats of giants. The Olmecks or Hulmecks, and the Xicalancks, two nations that preceded the Toltecks, and who boasted of high antiquity, pretended to have found them on arriving in the plains of Tlascala†. According to the Pouranas, Bacchus, or the young Rama, gained also his

\* Tit. Liv. Hist. lib. 7, c. 3 (ed. Gesneri, 1735, tom. 1, p. 461).

† Torquemada, vol. 1, p. 37.

first victory over Ravana, king of the giants of the Island of Ceylon.

The year over which the sign *ce acatl* presided was a year of famine, that destroyed the first generation of men. This catastrophe began on the day 4 tiger (*nahui ocelotl*) ; and it is probably on account of the hieroglyphic of this day, that, according to other traditions, the giants, who did not perish by famine, were devoured by those tigers (*tequanes*), the appearance of which was dreaded by the Mexicans at the end of every cycle. The hieroglyphic painting represents a malignant spirit descending on the earth to root up the grass and the flowers. Three human figures, among which we easily recognise a woman, by her headdress formed of two small tresses resembling horns \*, hold in their right hands a sharp-edged instrument, and in their left, fruit, or ears of corn. The spirit, that announces famine, wears one of those rosaries †, which, from time immemorial, have been in use in Thibet, China, Canada, and Mexico ; and which have passed from the east to the Christians of the west. Though among all the nations of the Earth the fiction of the giants, of the Titans, and of the Cyclops, appears to indicate the conflict of the elements, or the state of

\* Plate XV, No. 3—7, 3.

† Plate XIV, No. 8.

the Globe on its issuing from Chaos, we cannot doubt, but that, in both Americas, the enormous fossil skeletons of animals spread over the surface of the Earth, have had a great influence on mythological history. At St. Helen's Point, to the north of Guayaquil, are enormous remains of unknown cetaceous animals. Peruvian traditions also state, that a colony of giants, who mutually destroyed each other, landed at this very point. Bones of mastodontes, and of fossil elephants belonging to a species that has disappeared from the surface of the Globe, abound in the kingdom of New Granada, and on the ridge of the Mexican Cordilleras\*. The plain also, which at two thousand seven hundred metres height extends from Suacha to Santa Fe de Bogota, bears the name of the *Field of the Giants*. It is probable, the Hulmecks boasted, that their ancestors had combated the giants on the fertile plain of Tlascalala, because we find on this spot molar teeth of mastodontes and elephants, which in every country the people take for teeth of men of colossal stature.

*Second cycle.* Its duration is  $12 \times 400 + 4 = 4804$  years. This is the age of fire, *Tletonatiuh*, or the red age, *Tzonchichilteck*. The god of fire, Xiuhteuctli, descends on the Earth in the year

\* Cuvier, Mém. de l'Institut., Class of Physical and Mathem. Sciences, year 7, p. 14.



governed by the sign *ce tecpatl*, the day *nahui quiahuitl*. As the birds alone were able to escape the general conflagration, tradition states, that all men were transformed into birds, except one man, and one woman, who saved themselves in the recess of a cavern.

*Third cycle.* The age of wind, or air, *Ehecatonatiuh*. Its duration is  $10 \times 400 + 10 = 4010$  years. The catastrophe took place on the day 4 wind (*nahui ehecatl*) of the year *ce tecpatl*. The drawing represents four times the hieroglyphic of the air or the wind, *ehecatl*. Men perished by hurricanes ; and some were transformed into apes. These animals did not appear in Mexico before this third age. I am ignorant who is the divinity, that descends on the Earth armed with a sickle. May it not be Quetzalcohuatl, the god of the air ? and may not the sickle signify, that the hurricane roots up the trees, as if they had been felled ? I doubt, however, whether the yellow stripes indicate, as the Spanish commentator pretends, the form of clouds driven by the tempest. Monkeys are in general less frequent in the warm part of Mexico, than in South America. These animals undertake distant migrations, when, driven by hunger, or the severity of the weather, they find themselves compelled to abandon their primitive abode. I know countries in the mountainous parts of Peru, the inhabitants of which remem-

ber the time, when new colonies of monkeys settled themselves in such and such a valley. Did the tradition of the five ages contain a trait of the history of animals? Could it designate a year, in which hurricanes, and earthquakes caused by volcanoes, induced the monkeys to make incursions into the mountains of Anahuac? In this cycle of tempests, two men only survived the catastrophe, by fleeing to a cavern, as at the end of the preceding age.

*Fourth cycle.* The age of water, *Atonatiuh*, the duration of which is  $10 \times 400 + 8 = 4008$  years. A great inundation, which began the year *ce calli*, the day 4 water (*nahui alt*), destroyed mankind. This is the last of the great revolutions, which the world has undergone. Men were transformed into fish, except one man and one woman, who saved themselves in the trunk of an *ahahuète*, or cupressus disticha. The drawing represents the goddess of water, called *Matlalcueje*, or *Chalchihcueje*, and considered as the companion of Tlaloc, descending towards the earth. Coxcox, the Noah of the Mexicans, and his wife *Xochiquetzal*, are seated in a trunk of a tree covered with leaves, and floating amidst the waters.

These four ages, which are also designated under the name of *suns*, contain together eighteen thousand and twenty-eight years; that is to say, six thousand years more than the four

Persian ages described in the *Zend-Avesta*\*. I no where find how many years had elapsed from the deluge of Coxcox to the sacrifice of Tlalixco, or till the reform of the Azteck calendar ; but, however near we may suppose these two periods, we still find that the Mexicans attributed to the world a duration of more than twenty thousand years. This duration certainly forms a contrast with the great period of the Hindoos, which consists of four millions three hundred and twenty thousand years ; and still more with the cosmogonical fiction of the Thibetans, according to which mankind already compute eighteen revolutions, each of which has several *padu*, expressed by numbers of sixty-two ciphers†. It is nevertheless remarkable, that we find an American people, who, according to the same system of the calendar in use among them on the arrival of Cortez, indicate the days and the years in which the world underwent great catastrophes farther back than twenty ages.

Le Gentil, Bailly, and Dupuis‡, have ingeniously explained the duration of the great cycles

\* Anquetil, *Zend-Avesta*, vol. 2, p. 352.

† Thibet. Alfab. p. 472.

‡ Le Gentil, *Voy. dans les Indes*, vol. 1, p. 235 ; Bailly, *Astron. Ind.*, p. lxxxviii and 212 : Bailly, *Hist. de l'Astron. Am.*, p. 76 : Dupuis, *Orig. des Cultes*, vol. 3, p. 164.

of Asia. I have never been able to discover any peculiar propriety in the number of 18028 years. It is not a multiple of 13, 19, 52, 60, 72, 360, or 1440, which are the numbers found in the cycles of the Asiatic nations. If the duration of the Mexican *four suns* were longer by three years ; and if for the numbers 5206, 4804, 4010, and 4008 years, the numbers 5206, 4807, 4009, and 4009, were substituted, we might suppose, that these cycles originated from a knowledge of the lunar period of nineteen years. But whatever be their real origin, it does not appear less certain, that they are fictions of the astronomical mythology, modified either by an obscure remembrance of some great revolution, which our planet has undergone ; or according to the physical and geological hypotheses, to which the aspect of marine petrifications and of fossil bones has given rise, even among nations the most remote from civilization.

On examining the paintings represented in the 26th plate, we find, in the four destructions, the emblems of four elements, earth, fire, air, and water. These same elements were also indicated by the four hieroglyphics \* of the years, rabbit, house, flint, and cane. *Calli*, or house, considered as the symbol of fire, reminds us of the

\* See vol. 13, p. 180 ; and Siguenza, in Gemelli, *Giro del Mondo*, tom. 6, p. 65.

usages of a northern people, who, from the inclemency of the climate, were obliged to warm their huts; and the idea of Vesta (*Ἑστία*), which, in the most ancient system of the Greek mythology, represents at once the *house*, the *hearth*, and the domestic *fire*. The sign *tecpatl*, flint, was dedicated to the god of the air, *Quetzalcohuatl*, a mysterious personage, who belongs to the heroic times of Mexican history, and of whom we have had occasion to speak several times in the course of this work. According to the Mexican calendar, *tecpatl* is the sign of the night, which, at the beginning of the cycle, accompanies the hieroglyphic of the day, called *ehecatl*, or *wind*. Perhaps the history of an aerolite, which fell from the sky on the summit of the pyramid of Cholula, dedicated to Quetzalcohuatl, led the Mexicans to establish this singular connexion between a flint (*tecpatl*) and the god of the winds.

We have observed, that the Mexican astrologers have given to the traditions of the destructions and regenerations of the world an historic character, in denoting the days and years of the great catastrophes according to the calendar of which they made use in the 16th century. A very simple calculation might lead them to find the hieroglyphic of the year, which preceded a given period 5206, or 4804 years. It is thus that the Chaldean and Egyptian astrologers, according



to Macrobius and Nonnus, indicated the position even of the planets at the epoch of the creation of the world, and that of the general deluge. On calculating, according to the system of the periodical series, the signs which presided over the years several ages before the sacrifice of Tlalixco, (the year *ome acatl*, or 2 *canes*, corresponding to the year 1091 of the christian æra, I find, that the dates and the signs do not entirely correspond with the duration of each Mexican age. Neither are they marked in the paintings in the Vatican ; but I have taken them from a fragment of Mexican history preserved by Alva Ixtlilxochitl, who fixes the duration of the four ages not to 18028, but only to 1417 years. We must not be surprised at this in astrological calculations ; for the first number includes almost as many indictions as the last contains years. Thus in the mystic chronology of the Hindoos, the substitution of days for *divine years*\* reduces the four ages of 4,320,000 years to 12000.

\* Bailly, Astr. Ind., p. ci.

<i>System of the Vatican MS. No. 3738.</i>	<i>System of the Tradition preserved by Ixtlilxochitl.</i>
Duration of the <i>first</i> age ... $100 \times 52 + 6 = 5206$ years	$13 \times 52 = 676$ years
Epoch of the first destruction.....	..... 1 acatl
Duration of the catastrophe .....	..... 13 years
Duration of the <i>second</i> age... $92 \times 52 + 20 = 4804$ years	$7 \times 52 = 364$ years
Epoch of the second destruction.....	..... 1 tecpatl
Duration of the <i>third</i> age..... $77 \times 52 + 6 = 4010$ years	$6 \times 52 = 312$ years
Epoch of the third destruction .....	..... 1 tecpatl
Duration of the <i>fourth</i> age ... $77 \times 52 + 4 = 4008$ years	$1 \times 52 = 52$ years
Epoch of the fourth destruction.....	..... 1 calli
346 cycles of 52 years + 36 = 18028 years	109 indictions of 13 years = 1417 years.

On examining, according to the system of the Mexican calendar, the numbers which are contained in this table, we see, that two ages, separated by an interval of years, the number of which is a multiple of 52, cannot have different

signs. It is impossible, that the fourth destruction should have taken place in the year *calli*, if the third happened in the year *tecpatl*. I cannot guess what has caused this error; it may however have been only in appearance, and in the historical monuments, which have been transmitted to us, there may have been no mention of the small number of years employed by nature for each regeneration. The Hindoos distinguish the interval between two cataclysms, and the duration of each; in the same manner, in the fragment of Ixtlilxochitl, we read, that the first catastrophe is seven hundred and seventy-six years distant from the second: but that the famine, which destroyed the giants, lasted thirteen years, or the quarter of a cycle. In the two chronological systems which we have just mentioned, the epocha of the creation of the world, or rather the beginning of the great periods, is the year presided by *tochtli*; which sign was to the Mexicans, what Aries was to the Persians. In every nation astronomy indicates the position of the Sun, at the moment when the stars begin their course; and we have already shown it to be probable, when speaking\* of the relations observed between the fiction of the ages and the signification of the hieroglyphic *ollin*, that *tochtli* corresponds to one of the solstitial points.

\* Vol. xiii, p. 352, p. 402.

According to the system of the Mexicans, the four great revolutions of nature are caused by the four elements; the first catastrophe is the annihilation of the productive faculty of the earth: the three others are owing to the action of fire, air, and water. After each destruction mankind was regenerated, and all of the ancient race that did not perish were transformed into birds, into monkeys, or into fish. These transformations remind us also of the traditions of the East: but in the system of the Hindoos, the ages, or *yougas*, are all terminated by inundations; and in that of the Egyptians\* the cataclysms alternate with conflagrations, and men save themselves sometimes on the mountains, and at other times in the valleys. We should wander from our subject, were we here to explain the small local revolutions, which took place at various periods in the mountainous parts of Greece †; and discuss the well-known passage of the second book of Herodotus, which has so much exercised the sagacity of commentators. It appears almost certain, that this passage does not relate to *apoca-*

\* Timæus, cap. 5, (Platon. *Oper.*, 1578, ed. Serran., t. 3, p. 22): *De Legib.*, lib. iii, (*Op. omn.*, t. ii, p. 676–679): *Origines contra Celsum*, lib. i, c. 20; lib. iv. c. 20 (ed. Delarue, p. 338 & 514).

† Arist. *Metcor.*, lib. i, c. 14 (*Op. omn. ed. Duxat*, 1639, p. 770).

*fastases*, but to four (seeming) changes in the places of the setting and rising of the Sun\*, caused by the precession of the equinoxes †.

We may be surprised at finding five ages or *suns* among the Mexican nations, while the Hindoos and Greeks admit only four; it may not be amiss, therefore, to observe, that the cosmogony of the Mexicans accords with that of the people of Thibet, which considers also the present as the fifth age. If we attentively examine the fine passage of Hesiod‡, in which he explains the oriental system of the renovation of nature, we see, that this poet counts in reality five generations in four ages. He divides the age of brass into two parts, which comprehend the third and fourth generations§; and we may be astonished, that so clear a passage should have sometimes been misinterpreted ||. We are ignorant of the number of ages recorded in the books of the Sybil ¶; but we think, that the

\* Herod. lib. ii, c. 142 (Larcher, 1802, t. 2, p. 482).

† Dupuis, *Mémoire explicatif du Zodiaque*, p. 37 et 39.

‡ Hesiod, *Opera & Dies*, v. 174 (*Op. omn.*, ed. Cleric., 1701, p. 224).

§ Hesiod, v. 143 & 155.

|| Fabricii *Bibl. Græca*, Hamb., 1790, vol. 1, p. 246.

¶ Virg. *Bucol.* IV, v. 4, (ed. Heyne, Lond. 1793, v. 1, p. 74 & 81).



analogies we have just indicated are not accidental, and that it is not uninteresting to the philosophical history of man, to see the same fictions spread from Etruria and Latium to Thibet, and thence to the ridge of the Cordilleras of Mexico.

Beside the tradition of the four suns, and the customs which we have already described\*, the *Cod. Vatican. anon.*, No. 3738, contains several curious figures. Of these we shall mention, fol. 4, the *chichiuhalquehuatl*, *tree of milk, or celestial tree*, that distils milk from the extremity of its branches, and around which are seated infants, who have expired a few days after their birth; fol. 5, a jaw tooth, perhaps of a mastodonte, weighing three pounds, given in 1564, by P. Rios, to the Viceroy Don Lewis de Velasco; fol. 8, the volcano *Cotcitépetl*, *speaking mountain*, celebrated for the penance of Quetzalcohuatl, and designated by a mouth and a tongue, which are the hieroglyphics of speech; fol. 10, the pyramid of Cholula; and fol. 57, the seven chiefs of the seven Mexican tribes, clothed with rabbits' skins, and issuing from the seven caverns of Chicomoztoc. From sheet 68 to sheet 93, this manuscript contains copies of hieroglyphical paintings composed after the conquest; we see natives hung upon trees, holding the cross in their hand; soldiers

\* Plate XIV, vol. xiii, p. 201.

of Cortez on horseback setting fire to a village ; monks baptizing wretched Indians at the moment they are about to be thrown into the water to be drowned. From these circumstances we recognise the arrival of the Europeans in the new world.

# HIEROGLYPHIC PAINTING,

TAKEN FROM THE

BORGIAN MANUSCRIPT OF VELETRI,

AND

SIGNS OF THE DAYS OF THE MEXICAN ALMANAC.

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## PLATE XXVII.

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THE twenty signs of the days have been selected from the first pages of the manuscript of Veletri, each of which contains five rows of thirteen hieroglyphics, and in all  $5 \times 13 \times 4 = 260$  days, or a year of twenty *half lunations* of the ritual almanac. These two hundred and sixty signs are so disposed, that four double pages are filled with the reduction of the periods of thirteen days, or half-decades of the civil almanac, of which fifty-two form a ritual year. It is worthy of remark also, that, in order to facilitate the reading of these pictures, the author has repeated,



Signs of the Days in the Marian Monach.

Pub<sup>d</sup> by Longman, Hurst, Rees, Orme & Brown, Aug<sup>t</sup> 1814.





at the beginning of each row, the last sign of the preceding row. Mr. Zoega has observed the same peculiarity in the Egyptian hieroglyphics ; and it is from observations of this kind, that he has judged whether hieroglyphics were read from right to left, or from left to right. We find in the *Codex Borgianus* the sign of motion, the print of a foot, sometimes added to the sign of a day : I am ignorant of the cause of this singular assemblage.

Of the four rows of the hieroglyphics of the day (Plate 27, No. 1), the first, which according to the system of the Mexican writing is the lowest row, exhibits, from right to left, *cipactli*, *ehecatli*, *calli*, *cuetzpalin*, and *cohuatl* ; the second, *miquiztli*, *mazatl*, *tochtli*, *atl*, and *itzcuintli* ; the third, *ozomatli*, *malinalli*, *acatl*, *ocelotl*, *quauhtli*, and *cozcaquauhtli* ; the fourth, or the uppermost row, *ollin*, *tecpatl*, *quiahuatl*, and *xochitl*. We have already given \* the significations of these hieroglyphics. On comparing the figures of the 27th plate with those published by Valadés, Gemelli, Clavigero, and Cardinal Lorenzana, we see how inaccurate are the notions, which have been hitherto given respecting the signs of the Mexican calendar.

The painting, which represents a figure appearing to have four hands (Plate 27, No. 2), is taken

\* Vol. xiii, p. 296, 313, 337—54.

from the *Codex Borgia*, fol. 58. I have copied a whole page, in order to give a clear idea of the distribution of this curious manuscript. As we find nothing among the Mexican hieroglyphics that announces the worship of the *lingam* (Φάλλος), so we observe none of those figures with several heads and hands, which characterize, as we may say, the mystic paintings of the Hindoos. The man placed on the right in the upper compartment is a priest clothed with the skin of a human victim recently sacrificed. The painter has marked the drops of blood, which cover this skin; that of the hands hangs on the arm of the sacrificer, who hence appears to have four hands. This costume, and the horrible and disgusting ceremonies which it recalls to mind, are described by Torquemada\*. A chapel, known under the name of *Yopico*, was built over the cavern that contained the human skins. We have already seen, that the fourth Mexican month *tlacaxipehualiztli*, which corresponds to our month of March, had received its denomination from these sanguinary festivals. In the *Codex Borgia*, which is a ritual calendar, we find in reality the figure of a priest, covered with the skin of a man, under the sign of the day which indicates the vernal equinox †. The head

\* Mon. Ind. lib. 10, cap. 12 (vol. ii, p. 271).

† Cod. Borg. fol. 25 (Fabr. MSS. n. 105, 275, and 299).  
See also vol. xiii, p. 290.

of the sacrificer is covered with one of those pointed caps, which are worn in China, and on the north-west coast of America. Opposite this figure is seated the god of fire, *Xiuhteuctli Tletl*, at whose feet is a sacred vase. In the first year of the Mexican cycle, *Tletl* is the *sign of night* for the day on which the vernal equinox falls.

The lower compartment (Plate 27, No. 2) represents the god *Tonacateuctli*, holding in his right hand a knife, some leaves of agave, and a bag of incense. We are entirely ignorant what is meant by the two children holding each other by the hand, and of whom a commentator has observed, that "they seem to speak the same language." The serpent placed below the temple might lead us to suspect, that they are the twin children of *Cihuacohuatl*, the celebrated *serpent woman*, the Eve of the Aztecks. But the small figures of the *Codex Borgianus*, fol. 61, are females, as is evidently indicated by the disposition of their hair; while those represented in the manuscript of the Vatican \* are males.

\* See Plate 23 of this Atlas.

## AN AZTECK HATCHET.

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### PLATE XXVIII.

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THIS hatchet, made of a compact feldspar passing into the real jade of M. de Saussure, is loaded with hieroglyphics. I am indebted for it to the kindness of Don Andres Manuel del Rio, professor of mineralogy in the school of mines at Mexico, and author of an excellent treatise on Oryctognosy. I have deposited it in the king of Prussia's cabinet at Berlin. Jade, compact feldspar (*dichter feldspath*), Lydian stone, and certain varieties of basalt, are all of them mineral substances, which, in both continents, as well as in the South Sea islands, furnished the savage and half civilized nations with the first materials for their hatchets, and various offensive weapons. As the Greeks and Romans employed brass long after the introduction of iron, so the Mexicans and Peruvians made use of stone hatchets, when copper and brass were very common among them. Notwithstanding our long and frequent

excursions in the Cordilleras of both Americas, we were never able to discover a rock of jade; and this rock being so scarce, the more are we surprised at the immense quantity of jade hatchets, which are found on digging in plains formerly inhabited, from the Ohio to the mountains of Chili.



AN AZTECK IDOL  
OF  
BASALTIC PORPHYRY,  
FOUND UNDER THE PAVEMENT OF THE  
*GREAT SQUARE AT MEXICO.*

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PLATE XXIX.

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THE whole of the remains of the Mexican sculpture and painting, which we have hitherto examined, prove, excepting a single group of figures represented on the eleventh plate, a total ignorance of the proportions of the human body, a great rudeness and incorrectness in the drawing, but a very minute research into the truth of the detail. We may be surprised at finding the imitative arts in this state of barbarism among a people, whose political existence had displayed for ages a certain degree of civilization; and among whom idolatry, astrological superstitions, and the desire of keeping up the remembrance

of events, multiplied the number of idols, as well as that of sculptured stones and historical paintings. We must not however forget, that several nations, which have acted a part on the stage of the world, particularly the people of central and eastern Asia, with whom the inhabitants of Mexico appear to be connected by very near ties, exhibit this same contrast of social perfection and of infancy in the arts. We might be tempted to apply to the inhabitants of Tartary, and those of the mountains of Mexico, what a great historian of antiquity\* said of the Arcadians: "The cold and gloomy climate of Arcadia gives the inhabitants a harsh and austere aspect; for it is natural that men, in their manners, figure, complexion, and institutions, should resemble their climate." But in proportion as we examine the state of our species in different regions, and accustom ourselves to compare the physiognomy of countries with that of the nations inhabiting them; we mistrust that specious theory, which refers to the climate alone what is owing to the concurrence of a great number of moral and physical circumstances.

Among the Mexicans, the ferocity of manners sanctioned by a sanguinary worship, the tyranny exercised by the princes and the priests, the chi-

\* Polyb., *Hist. lib.* IV, § 80 (ed. Casaub. 1609, p. 290, D).

merical dreams of astrology, and the frequent use of symbolic writing, appear to have singularly contributed to perpetuate the barbarism of the arts, and the taste for incorrect and hideous forms. Those idols, before which the blood of human victims daily flowed ; those first divinities, the offspring of fear ; united in their attributes all that is strange in nature. The lineaments of the human figure disappeared under the load of their garments, helmets with heads of carnivorous animals, and serpents twisted round the body. A religious respect for the signs conferred on every idol its individual figure, from which it was not allowable to deviate ; and it was by these means, that the incorrectness of the figures was perpetuated, and the people accustomed themselves to the assemblage of those monstrous resemblances, which were however disposed according to systematic ideas. Astrology, and the complicated manner of graphically marking the divisions of time, were the principal causes of these aberrations of the imagination. Each event seemed to be at the same time under the influence of the hieroglyphics which presided over the day, the half-decade or the year ; and hence arose the idea of coupling signs, and creating those merely fantastic beings, which we find so often repeated in the astrological paintings that have reached us. The genius of the American languages, which, like the Sanscrit, the Greek,

and tongues of Germanic origin, leads us to recall to mind a great number of ideas in a single word, has no doubt facilitated those uncouth creations of mythology and the imitative arts.

The people, faithful to their primitive habits, whatever be the degree of their intellectual culture, pursue, for ages, the path they have once traced. An intelligent writer\* has remarked, speaking of the solemn simplicity of the Egyptian hieroglyphics, "that these hieroglyphics offered rather an absence, than a viciousness of imitation." It is on the contrary this viciousness of imitation, this taste for the minutest details, this repetition of the most ordinary forms, that characterize the historical paintings of the Mexicans. We have already observed †, that we ought not to confound representations, in which almost every thing is individualized, with mere hieroglyphics, adapted to represent abstract ideas. If from these the Greeks borrowed the ideal style ‡, the Mexican people found, in the frequent employment of historical and astrological paintings, and in their respect for forms generally uncouth, and always incorrect, insuperable obstacles to the progress of the imitative arts. In

\* Quatremère de Quincy, sur l'Idéal dans l'Art du Dessin, Archives littéraires, 1805, No. 21, p. 300 and 310.

† See vol. xiii, p. 349.

‡ Quatremère de Quincy, page 303—307.

Greece religion became the chief support of the fine arts, to which it gave existence ; and the imagination of the Greeks spread a soothing charm over the most gloomy objects. Among a people groaning beneath the yoke of a sanguinary worship, death every where obtrudes itself under the most hideous emblems ; it is engraven on every stone, inscribed on every page of their books, and their religious monuments seem to be reared with no other view, than to produce terror and dismay.

I have thought proper to make these observations, before I fix the attention of the reader on the monstrous idol represented in the 29th plate. This rock, sculptured on every side, is more than three metres high, and two broad. It was discovered under the pavement of the Plaza Mayor at Mexico, within the enclosure of the great temple, in the month of August, 1790 ; consequently a few months before\* the discovery of the enormous stone, which displays the holidays and the hieroglyphics of the days of the Azteck calendar. The workmen, who were employed in making excavations in order to build a subterraneous aqueduct, found it in a horizontal position, thirty-seven metres to the west of the Viceroy's palace, and five metres north of the Azequia of St. Joseph. As it is scarcely probable,

\* See vol. xiii, p. 397.



that the soldiers of Cortez, when they buried the idols to conceal them from the view of the natives, transported masses of considerable weight very far from the *sacellum* where they were originally placed, it is important to mark with precision the spots, in which all the remains of Mexican sculpture were found. These nations will become particularly interesting, if a government, anxious to throw light on the remote civilization of the Americans, should make researches by digging round the cathedral in the chief square of the ancient Tenochtitlan, and the market-place Tlatelalco\*, to which, in the last days of the siege, the Mexicans withdrew with their household gods (*Tepitotan*), their sacred books (*Teomoxtli*,) and whatever they had of most value.

When we cast our eyes on the idol represented in the 29th plate, as it is seen in front (Fig. 1), behind (Fig. 3), on one side (Fig. 2), from above (Fig. 4), and from beneath (Fig. 5), we might be tempted at first to think, that this monument is a *teotetl* (*divine stone*), a kind of *bety-lum*†, ornamented with sculpture, a rock on which hieroglyphic signs are engraved. But when we examine more closely this shapeless mass, we distinguish on the upper part the unit-

\* Gama, *Descripcion de las Piedras*, etc. p. 2.

† Zoega, *de Obel.* p. 208.

ed heads of two monsters ; and we find in each face (Fig. 1 and 3) two eyes, and a large mouth with four teeth. These hideous figures are perhaps only masks ; for among the Mexicans they were accustomed to mask their idols on the indisposition of a king, or any other public calamity. The arms and feet are hidden under a drapery surrounded by enormous serpents, which the Mexicans denoted by the name of *cohuatllicuye*, *garment of serpents*. The whole of these accessories, especially the fringes in form of feathers, are sculptured with the greatest care. Mr. Gama, in a separate treatise, has rendered it very probable, that this idol represents (Fig. 3) the god of war, *Huitzilopochtli* or *Tlacahuepancuxcotzin* ; and (Fig. 1) his wife, called *Teoyamiqui*\* (from *miqui* to die, and *teoyao*, *divine war*), because she conducted the souls of warriors, who died in the defence of the gods, to the *house of the Sun*, the Elysium of the Mexicans†, where she transformed them into humming-birds. The death's heads and mutilated hands, four of which surround the bosom of the goddess, recall to mind the horrible sacrifices (*teoquauhquetzolitli*) celebrated in the fifteenth period of thirteen days after the summer solstice, in honor of the god of war, and his female companion, *Teoya-*

\* Boturini, *Idea de una nueva Historia general*, p. 27 and 66.

† Torquemada, lib. xiii, c. 48 (tom. 2, p. 569).

*miqui*. The mutilated hands alternate with the figure of certain vases, in which incense was burnt. These vases were called *top-xicalli*, bags in the form of calabashes, (from *toptli*, a purse woven with the thread of the pita, and *xicalli*, a calabash).

This idol being sculptured on every side, even beneath (Fig. 5), where we see represented *Mictlanteuchtli*, the lord of the place of the dead, we cannot doubt, but that it was supported in the air by means of two columns, on which rested the parts A and B in figures 1 and 3. According to this uncouth arrangement, the head of the idol was probably elevated five or six metres above the pavement of the temple, so that the priests (*teopixqui*) dragged the unhappy victims to the altar, making them pass beneath the figure *Mictlanteuchtli*.

The Viceroy, count Revillagigedo, transported this monument to the university of Mexico, which he considered as the most proper place for the preservation of the curious remains of American antiquity \*. The professors of this University, of the order of St. Dominic, were unwilling to expose this idol to the sight of the Mexican youth ; and buried it anew in one of the passages of the college two feet deep. I should not have had the means of examining this

\* Officio del 5 Sept. 1790.

idol, had not the bishop of Monterey, Don Feliciano Marin, who passed through Mexico in his way to his diocese, prevailed on the rector of the university, at my solicitation, to unbury it. I found Mr. Gama's drawing, which I have copied in the 29th plate, very exact. The stone, of which this monument is formed, is a bluish gray basaltic wakke, cleft, and filled with vitreous feldspar.

The same researches in digging to which we are indebted for the sculptures represented in plates 21, 23, and 29, led to the discovery, in the month of January, 1791, of a tomb two metres long, and one broad, filled with very fine sand, and containing a well preserved skeleton of a carnivorous quadruped. The tomb was square, and formed of slabs of porous amygdaloid, called *tezontle*. The animal appeared to be a *coyote*, or Mexican wolf. Clay vases and small well cast brass bells were placed near the bones. This tomb was no doubt that of some sacred animal; for the writers of the sixteenth century inform us, that the Mexicans erected small chapels to the wolf, *chantico*; to the tiger, *clatocaocelotl*; to the eagle, *quetzalhuexol-quauhtli*; and to the snake. The *cou*, or *sacellum* of the *chantico*, was called *tetlanman*; and what is more, the *priests of the sacred wolf* formed a particular congregation, the convent

of which bore the name of *Tetlacmancalmecac*\*.

It is easy to conceive how the divisions of the zodiac, and the names of the signs that presided over the days, the half-lunations, and the years, may have led men to the worship of animals. The nomade tribes reckon by lunations; they distinguish the moon of the rabbits, that of the tigers, that of the goats, &c., according to the different periods of the year in which the wild or tame animals afford them enjoyments, or inspire them with terror. When by degrees the measures of time become measures of space†, and nations form the dodecatemoron of the *zodiac of the full moons*, the names of the wild and tame animals are transferred to the constellations themselves. It is thus that the Tartar zodiac, which contains only real ζῳδια, may be considered as the *zodiac of the hunting and shepherd tribes*. The tiger, unknown in Africa, gives it a character exclusively Asiatic. This animal is no longer found in the Chaldean, Egyptian, or Greek zodiac, in which the tiger, the hare, the horse, and the dog, are replaced by the lion of Africa, Thrace, and western Asia,

\* Nieremberg, *Hist. Nat. Lib.* viii, c. 22, p. 144: Torquemada, lib. II, c. 58; lib. VIII, c. 13 (tom. 1. p. 194; tom. 2, p. 291).

† See vol. xiii, p. 370.



the balance, the twins, and, what is very remarkable, by the symbols of agriculture. The Egyptian zodiac is the *zodiac of an agricultural nation*. In proportion as nations are civilized, and the mass of their ideas enlarged, the denominations of the zodiacal constellations have lost their primitive uniformity, and the number of *celestial animals* has diminished. This number, however, has remained considerable enough, to exercise an evident influence on religious systems. Astrological reveries have led men, to attach a great importance to the signs, which preside over the different divisions of time. At Mexico, each sign of the days had its altar. In the great *teocalli* (Θεῶν καὶ λιά), near the column which supported the image of the planet Venus (*Ilhuicatitlan*), were small chapels for the asterisms *macuilcalli* (5 house), *ome tochtli* (2 rabbit), *chicome atl* (7 water), and *nahui ocelotl* (4 tiger); as the greater part of the hieroglyphics of the days was composed of animals, the worship of these was intimately connected with the system of the Calendar.

## CATARACT

OF THE

*RIO VINAGRE,*

NEAR THE VOLCANO OF PURACE.

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PLATE XXX.

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THE city of Popayan, capital of a province of New Grenada, is situate in the beautiful valley of Rio Cauca, at the foot of the great volcanoes of Puracé and Sotara. Its height above the level of the South Sea being only eighteen hundred metres, it enjoys, under a latitude of  $2^{\circ} 26' 17''$ , a delicious climate, much less sultry than that of Carthago and Ibagué, and infinitely more temperate than that of Quito and Santa-Fe de Bogota. On ascending from Popayan toward the top of the volcano of Puracé, one of the great elevations of the Andes, we find, at two thousand six hundred and fifty metres height, a small plain (*Llano del Corazon*), inhabited by

Indians, and cultivated with the greatest care. This delightful plain is bounded by two ravines extremely deep, on the brink of which precipices the houses of the village of Puracé are built. Waters spring out profusely from the porphyritic rock ; every garden is enclosed by a hedge of euphorbiums (*lechero*) with slender leaves, and of the most delicate green. Nothing is more agreeable than the contrast of this beautiful verdure with the chain of black and arid mountains, which surround the volcano, and which are cleft and torn asunder by earthquakes.

The small village of Puracé, which we visited in the month of November, 1801, is celebrated in the country for the beautiful cataracts of the river Puşambio, the waters of which are acid, and called by the Spaniards Rio Vinagre. This small river is warm toward its source, and probably owes its origin to the daily melting of the snows, and the sulphur that burns in the interior of the volcano. It forms, near the plain of Co-razan, three cataracts, the two uppermost of which are very considerable. The second of these falls (*chorreras*), I have sketched in the 30th plate, as it is seen from the garden of an Indian, near the house of the missionary of Puracé, who is a franciscan monk. The water, which makes its way through a cavern, precipitates itself down more than a hundred and

twenty metres. The cascade is extremely picturesque, and attracts the attention of travellers; but the inhabitants of Popayan regret, that the river, instead of mingling itself with the Rio Cauca, is not ingulfed in some abyss: for the latter river is destitute of fish for four leagues, on account of the mixture of its waters with those of the Rio Vinagre, which are loaded both with oxid of iron, and sulphuric and muriatic acids.

On the foreground of the sketch is a group of *pourretia pyramidata*, a plant resembling the *pitcairnia*, known on the Cordilleras by the name of *achupallas*. The stem of this plant is filled with a farinaceous pith, which serves as food to the great black bear of the Andes, and in times of scarcity even to men.

# POSTMAN

OF THE

PROVINCE OF JAEN DE BRACAMOROS.

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## PLATE XXXI.

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IN order to render the communication between the coasts of the Pacific Ocean, and the province of Jean de Bracamoros, situate on the east of the Andes, more easy, the postman of Peru descends swimming, for two days, first the river of Guancabamba, or Chamaya, and afterward that of *Amazons*, from Pomahuaca and Inga-tambo to Tomependa. He wraps the few letters, of which he is the bearer every month, sometimes in a handkerchief, sometimes in a kind of drawers called *guayuco*, which he winds as a turban around his head. This turban contains also the great knife (*machette*), with which every Indian is armed, rather to cut his way through the forests, than as a weapon of defence.



The Chamaya river is not navigable, on account of a great number of small cascades; I found\* its fall five hundred and forty-two metres from the ford of Pucara to its mouth, in the river of Amazons, below the village of Choras, in the small distance of eighteen leagues. The postman is called in the country the swimming postman (*el coreo que nada*). The 31st plate represents him as we saw him in the village of Chamaya, at the moment he entered the water. In order to fatigue himself less in descending the river, he supports himself on a log of bombax or ochroma (*palo de valza*), trees of very light wood. When a ledge of rocks intersects the bed of the river, he lands above the cascade, crosses the forest, and reenters the water when he sees no farther danger. He has no need of taking provision with him, for he finds a welcome in a great number of huts, surrounded with plaintain trees, and situate along the banks of the river between las Huertas de Pucara, Cavico, Sonanga, and Tomependa. Sometimes, to render the journey more agreeable, he is accompanied by another Indian. The rivers, which mingle their waters with those of the Marannon above Pongo de Mayasi, are happily not infested with crocodiles; the savage hordes, therefore, almost all travel like the Pe-

\* See my Recueil d'Observ. Astron. vol. 1, p. 314.

ruvian postman. It is very seldom, that letters are either lost or wetted during the passage from Ingatambo to the residence of the governor of Jaen. After the postman has rested a few days at Tomependa, he returns either by the *Paramo de Pareton*, or by the dangerous road which leads to the villages of San Felipe and Sagiqué, the forests of which abound in bark of the finest quality.

# HIEROGLYPHICAL HISTORY

OF THE

## AZTECKS,

FROM

THE DELUGE TO THE FOUNDATION

OF THE

CITY OF MEXICO.

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PLATE XXXII.

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THIS historic painting has already been published, at the end of the seventeenth century, in the narrative of the voyage of Gemelli Carreri. Although the *Giro del Mondo* of this author is a work well known, we have thought it proper to republish this piece, on the authenticity of which some ill-founded doubts have been raised, that deserve to be examined with the most scrupulous attention. It is only by the reunion of a great number of documents, that we can hope

to throw some light on the history, the manners, and the civilization of those nations of America, that were ignorant of the admirable art of analyzing sounds, and painting them by separate or combined characters. A comparison of the documents <sup>with</sup> ~~which~~ each other not only renders their explanation easy, but affords also certain data respecting the confidence, which the Azteck traditions recorded in the writings of the first Spanish missionaries deserve. I think, that such powerful motives will be a sufficient justification of the choice we have made of a few articles collected from works already printed, and adding them to the many inedited documents published in this collection.

The hieroglyphic sketch given in the 32d plate has been hitherto so much the more neglected, as it is found in a book, which, in consequence of the most extraordinary scepticism, has been considered as a mass of falsehood and imposture. I durst not speak of Gemelli Careri, says the illustrious author of the History of America, "because it seems to be now a received opinion, that this traveller was never out of Italy; and that his famous *Giro del Mondo* is an account of a fictitious voyage." It is true, that Robertson does not seem to adopt the opinion he advances: for he judiciously adds, that this imputation of fraud does not appear to him founded

on any good evidence\*. I shall not decide the question, whether Gemelli visited China or Persia ; but, having travelled in the interior of Mexico a great part of the road, which the Italian traveller so minutely describes, I can affirm it to be no less certain, that Gemelli was in Mexico, at Acapulco, and the small villages of Mazatlan and of San Augustin de las Cuevas, than that Pallas has been in the Crimea, and Mr. Salt in Abyssinia. Gemelli's descriptions have that local tint, which is the principal charm of the narratives of travels, written by the most unlettered men ; and which can be given only by those who have been ocular witnesses of what they describe. A respectable ecclesiastic, Abbé Clavigero†, who traversed Mexico almost half a century before me, had already undertaken the defence of the author *del Giro del Mondo* ; and has very justly observed, that, had Gemelli never left Italy, it was impossible that he could have spoken with so much accuracy of persons, who lived in his time, of the convents of the city of Mexico, and of the churches of several villages, the names of which were unknown in Europe. The same tone of veracity, and we must insist on this point, does not appear in the notions, which the author professes to have borrowed

\* Robertson's History of America, 1803, vol. iii, p. 418.

† *Storia Antica di Messico*, vol. i, p. 24.



from the recitals of his friends. The work of Gemelli Carreri, like that of a celebrated traveller, who, in our own times, has been treated with so much severity, seems to contain an inextricable mixture of errors and well observed facts.

The sketch of the migration of the Aztecks formerly made part of the distinguished collection of Dr. Siguenza, who inherited the hieroglyphic paintings of a noble Indian, Juan de Alba Ixtlilxochitl. This collection, as Abbé Clavigero affirms, was preserved, till 1759, in the college of the Jesuits at Mexico. We are ignorant of its fate after the destruction of the order. I turned over the leaves of the Azteck paintings preserved in the library of the University, without being able to find the original of the drawing represented in the 32d plate; but several old copies exist at Mexico, which certainly were not made from the engraving of Gemelli Carreri. If we compare all that is symbolical and chronological in the painting of the migrations with the hieroglyphics contained in the manuscripts of Rome and Veletri, and in the collections of Mendoza and Gama, no one certainly would give credit to the hypothesis, that the drawing of Gemelli is the fiction of some Spanish monk, who has attempted to prove, by apocryphal documents, that the traditions of the Hebrews are found among the indigenous nations of America. All that we know of the

history, the worship, the astrology, and the cosmogonical fables of the Mexicans, forms a system, the parts of which are closely connected with each other. The paintings, the bas-reliefs, the ornaments of the idols and of the *divine stones* (*teotetl* of the Aztecks, θεῶν πέτρα of the Greeks), all bear the same character, and the same physiognomy. The deluge that begins the history of the Aztecks, and from which Coxcox saved himself in a bark, is indicated with the same circumstances in the drawing, which represents the destructions and regenerations of the world \*. The four indictions (*tlalpilli*), which relate† to these catastrophes, or to the subdivisions of the *great year*, are sculptured on a stone, discovered in 1790 in the foundations of the *teocalli* of Mexico. Robertson, who is always severe in the examination of facts, has admitted, in the last edition of his work, the authenticity of the paintings of the museum of Siguenza. "We cannot doubt," says this great historian, "that we are indebted for these paintings to the natives of Mexico, and the correctness of the drawing seems to prove only, that the copy has been made or retouched by an European artist." This last observation does not appear to be entirely confirmed by the great number of hiero-

\* Plate 26.

† See page 25 ; and vol. xiii, p. 372.

glyphic paintings preserved in the archives of the viceroyalty at Mexico, where, since the conquest, and especially since the year 1540, an evident improvement in the art of drawing is perceived. I saw, in the Boturini collection, clothes of cotton, and rolls of agave paper, on which were represented, by very correct outlines, bishops on the backs of mules, Spanish lancemen on horseback, oxen yoked to a plough, vessels arriving at Vera Cruz, and a number of other objects unknown to the Mexicans before the arrival of Cortez. These paintings were made not by Europeans, but by Indians and Mestizoes. On looking over the hieroglyphic manuscripts of different periods, we observe the progress of the arts toward perfection. The stunted figures become more proportionate. The limbs separate themselves from the trunk ; the eye in profile is no longer seen as if it were in the front ; horses, which in the Azteck paintings resembled Mexican stags, assume gradually their real form. The figures are no longer grouped as if in procession ; their relations to each other are multiplied ; we see them in action ; and the symbolic painting, which sketches or recalls events, rather than expresses them, is insensibly transformed into an animated painting, which employs only a few phonetic hieroglyphics\*, to indicate the names of

\* See vol. xiii, page 159.

persons and sites. I am inclined to think, that the picture, which Siguenza communicated to Gemelli, is a copy made after the conquest, either by a native, or the descendant of a Spaniard and a Mexican. The painter has no doubt avoided following the incorrect forms of the original; he has imitated with scrupulous exactness the hieroglyphics of the names, and the cycles; but he has altered the proportions of the human figures, the drapery of which he has formed in a manner analogous to that we have found in other Mexican paintings\*.

The following are the principal events indicated in the 32d plate, according to Siguenza's explanation, to which we shall add a few incidents taken from the historical annals of the Mexicans.

The history begins by the Deluge of Coxcox, or the fourth destruction of the world, which, according to the Azteck cosmogony, terminates the fourth of the great cycles, *atonatiuh*, the age water †. This cataclysm took place, according to the two received chronological systems, one thousand four hundred and seventeen, or eighteen thousand and twenty-eight years after the beginning of the age of earth, *tlaltonatiuh*. The enormous difference of these numbers ought

\* Plate 14, No. 5 and 7.

† See above, page 23.

less to astonish us, when we recollect the hypotheses, which in our days have been advanced by Bailly, Sir William Jones, and Bentley \*, on the duration of the five Yougas of the Hindoos. Of the different nations that inhabit Mexico, paintings representing the deluge of Coxcox are found among the Aztecks, the Miztecks, the Zapotecks, the Tlascaltecks, and the Mechoacanese. The Noah, Xisuthrus, or Menou of these nations, is called Coxcox, Teo-Cipactli, or Tezpi. He saved himself conjointly with his wife, Xochiquetzal, in a bark, or, according to other traditions, on a raft of *ahuahuete* (cupressus disticha). The painting represents Coxcox in the midst of the water, lying in a bark. The mountain, the summit of which, crowned by a tree, rises above the waters, is the Peak of Colhuacan, the Ararat of the Mexicans. The horn, which is represented on the left, is the phonetic hieroglyphic of Colhuacan. At the foot of the mountain appear the heads of Coxcox and his wife. The latter of these is known by the two tresses in the form of horns, which, as we have often observed, denote the female sex. The men born after the deluge were dumb: a dove, from the top of a tree, distributes among them tongues, represented under the form of small commas †.

\* Asiat. Researches, Vol. 8, page 195.

† See the lawsuit in Plate 12.



We must not confound this dove with the bird which brings Coxcox tidings, that the waters were dried up. The people of Mechoacan preserved a tradition, according to which Coxcox, whom they called Tezpi, embarked in a spacious *acalli* with his wife, his children, several animals, and grain, the preservation of which was of importance to mankind. When the great spirit, Tezcatlipoca, ordered the waters to withdraw, Tezpi sent out from his bark a vulture, the *xopilote* (*vultur aura*). This bird, which feeds on dead flesh, did not return on account of the great number of carcasses, with which the earth, recently dried up, was strewed. Tezpi sent out other birds, one of which, the humming bird alone, returned, holding in its beak a branch covered with leaves; Tezpi, seeing that fresh verdure began to clothe the soil, quitted his bark near the mountain of Colhuacan.

These traditions, we here repeat, remind us of others of high and venerable antiquity. The sight of marine substances, found even on the loftiest summits, might give men, who have had no communication, the idea of great inundations, which for a certain time extinguished organic life on the earth: but ought we not to acknowledge the traces of a common origin, wherever cosmogonical ideas, and the first traditions of nations, offer striking analogies even in the minutest circumstances? does not the humming-

bird of Tezpi remind us of Noah's dove, that of Deucalion, and the birds, which, according to Berosus, Xisuthrus sent out from his ark, to see whether the waters had run off, and whether he might erect altars to the protecting divinities of Chaldea ?

The tongues, which the dove distributed to the nations of America (No. 1), being infinitely varied, these nations disperse, and fifteen heads of families only, who spoke the same tongue, and from whom the Toltecks, the Aztecks, and the Acolhuans descended, unite, and arrive at Aztlan, (the country of the *garces* or flamingoes). The bird placed on the hieroglyphic of water, *atl*, denotes Aztlan. The pyramidical monument with steps is a *teocalli*. I am astonished at finding a palm tree near this teocalli: this plant certainly does not indicate a northern region; nevertheless it is almost certain, that we must look for the first country of the Mexican nations, Aztlan, Huehuetlapallan, and Amaquemecan, at least North of the 42d degree of latitude. Perhaps the Mexican painter, inhabiting the torrid zone, placed a palm-tree near the temple of Aztlan only because he was ignorant, that this tree was a stranger to the northern countries. The fifteen chiefs have the simple hieroglyphics of their names above their heads.

From the teocalli erected in Aztlan to Chapoltepec the figures placed along the road indicate

the places where the Aztecks made some abode, and the towns they built. Tocolco and Oztotlan (No. 3 and 4), *humiliation and the place of grottoes*; Mizquiahuala (No. 5), denoted by a mimosa bearing fruit placed near a teocalli; Teotzapotlan (No. 11), *place of divine fruits*; Ilhuicatepec (No. 12); Papantla (No. 13), *herb with broad leaves*; Tzompango (No. 14), *place of human bones*; Apazco (No. 15), *vessel of clay*; Atlicalaguan (a little above the preceding hieroglyphic), *a crevice in which a rivulet disappears*; Quauhtitlan (No. 16), *a thicket inhabited by an eagle*; Atzcapozalco (No. 17), *an ant's nest*; Chalco (No. 18), *place of precious stones*; Pantitlan (No. 19), *place of spinning*; Tolpetlac (No. 20), *mats of rushes*; Quauhtepec (No. 9), *the eagle's mountain*, from *quauhtli*, an eagle, and *tepec* (in Turkish *tepe*) a mountain; Tete-panco (No. 8), *a wall composed of several small stones*; Chicomoztoc (No. 7), *the seven grottoes*; Huitzquilcan (No. 6), *place of thistles*; Xaltepoauhcan (No. 22), *place from which sand is extracted*; Cozcaquauhco (No. 33), name of a vulture; Techcatitlan (No. 31), *place of obsidian mirrors*; Azcaxochitl (No. 21), *flower of the ant*; Tepetlapan (No. 23), place where is found the *tepelate*, a clayey breccia, which contains amphibole, vitreous feldspar, and pumice stone; Apan (No. 32), *place of water*; Teozomaco (No. 24), *place of the divine monkey*; Chopoltepec (No. 25),

*mountain of the locusts*, a place shadowed by ancient cypresses, and celebrated for the magnificent view from the top of the hill\* ; Coxcox, king of Colhuacan (No. 30), denoted by the same phonetic hieroglyphics as are found in the square, which represents the deluge of Coxcox, and the mountain of Colhuacan ; Mixiuhcan (No. 29), *place of childbirth* ; the city of Temazcatitlan (No. 26) ; the city of Tenochtitlan (No. 34), designated by dykes traversing a marshy soil, and by the nopal (cactus) on which reposed the eagle, which had been pointed out by the oracle, to mark the place where the Aztecs were to build a city, and finish their migrations ; the founders of Tenochtitlan (No. 35) ; those of Tlatelalco (No. 27) ; the city of Tlatelalco (No. 28), which is at present only a suburb of Mexico.

We shall not enter into an historical detail of the events to which the simple and compound hieroglyphics of the painting of Siguenza relate. These events are recorded in Torquemada, and in the ancient history of Mexico published by the Abbé Clavigero. Besides, this picture is less curious as a monument of history, than interesting, from the method which the artist has followed for the connexion of facts. We shall content ourselves with noticing here, that the bundles of

\* See my Essay on New Spain, vol. i, page 179, 2.



rushes tied with ribands (No. 2), do not represent, as Gemelli asserts, periods of a hundred and four years, or Huehuetiliztli, but cycles, or ligatures, *Xiuhmolphilli*, of fifty-two years\*. The whole picture exhibits only eight of these ligatures, or four hundred and sixteen years. Remembering, that the city of Tenochtitlan was founded in the 27th year of a *Xiuhmolphilli*, we find, that, according to the chronology of the picture (Plate 32), the emigration of the Mexican nations from Aztlan took place five cycles before the year 1298, or in the year 1038 of the Christian era. Gama places this emigration, from other indications, in 1064. The circles accompanying the hieroglyphic of a ligature denote the number of times, that the years have been *connected* since the famous sacrifice of Tlalixco. Now, in the painting under our examination, we find the hieroglyphic of the cycle followed by four nails, or units, near the hieroglyphic of the city of Colhuacan (No. 30). It was then in the year 208 of their era, that the Aztecks were relieved from the yoke of the kings of Colhuacan; and this date is conformable to the annals of Chimalpain. The circles placed on the side of the hieroglyphics of the cities (Nos. 14 and 17), denote the number of the years, that the Azteck nation dwelt in each place, before it continued

\* See vol. xiii, p. 286.



its migrations. I think the ligature (No. 2) indicates the cycle that terminated at Tlalixco : for, according to Chimalpain, the festival of the second cycle was celebrated at Cohuatepetl ; and that of the third cycle, at Apuzco ; while the festivals of the fourth and fifth cycles took place at Colhuacan, and at Tenochtitlan.

The singular idea of recording on a single sheet of small size what in other Mexican paintings often fills pieces of cloth, or skins, ten or twelve metres in length, has rendered this historical abridgment extremely incomplete. It treats of the migration of the Aztecks only, and not of that of the Toltecks, who preceded the Aztecks more than five centuries in the country of Anahuac ; and who differed from them by that love of the arts, and that religious and pacific character, which distinguished the Etruscans from the first inhabitants of Rome. The heroic times of the Azteck history extend to the eleventh century of the Christian era. Till then, the divinities mingled in the action of men ; and it was at this epocha that Quetzalcohuatl, the Bouddha of the Mexicans, a white and bearded man, priest and legislator, devoted to the most rigorous penances, founder of monasteries and congregations like those of Thibet and western Asia, appeared on the coasts of Panuco. Every thing anterior to the emigration from Aztlan is mixed with childish fables. Among barbarous nations, with-

out means of preserving the remembrance of facts, the knowledge of their history is confined to a very short period. There is a point of their existence, beyond which they no longer measure the interval of events. In time, as well as space, distant objects approach each other, and are confounded together ; and the same cataclysm, which the Hindoos, the Chinese, and all the nations of the Semitic race place thousands of years before the improvement of their social state, the Americans, a people perhaps not less ancient, but whose awakening has been of a later date, supposed to be only two cycles before their emigration from Aztlan.

## BRIDGE OF ROPES

NEAR

*PENIPÉ.*

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PLATE XXXIII.

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THE small river of Chambo, which flows from the lake of Coley, separates the pleasing village of Guanando from that of Penipé. It waters a ravine, the bottom of which is two thousand four hundred metres above the level of the ocean; and which is celebrated for the cultivation of cochineal\*, which the natives have followed from time immemorial. In crossing this country to reach Riobamba, on the western declivity of the volcano of Tunguragua, we stopped to examine the country disrupted by the memorable earthquake of the 7th of February, 1797; which, in the space of a few minutes, destroyed thirty or

\* See my Political Essay on New Spain, vol. ii, p. 465.



*Bridge of Ropes, near Penipe.*





forty thousand Indians. We passed the river of Chambo by the bridge of Penipé, in the month of June, 1802. This is one of those bridges of ropes, which the Spaniards call *puente de maroma*, or *de hamaca*; and the Peruvian Indians, in the qquichua language, or that of the Incas, *cimppachaca*, from *cimppa*, or *cimpassca*, ropes, tresses, and *chaca*, a bridge. The ropes, three or four inches in diameter, are made of the fibrous part of the roots of the *agave Americana*. On each bank they are fastened to a clumsy framework, composed of several trunks of the *schinus molle*. As their weight makes them bend toward the middle of the river, and as it would be imprudent to stretch them with too much force, they are obliged, when the banks are low, to form steps or ladders at both extremities of the bridge of *hamac*. That of Penipé is a hundred and twenty feet long, and seven or eight broad; but there are bridges, which have more considerable dimensions. The great ropes of *pitte* are covered transversely with small cylindrical pieces of bamboo. These structures, of which the people of South America made use long before the arrival of the Europeans, remind us of the chain bridges at Boutan, and in the interior of Africa. Mr. Turner \*, in his interesting account

\* Account of an Embassy to the Court of the Teshoo Lama in Thibet, 1800, page 55.

of his journey to Thibet, has given us the plan of the bridge of Tchintchieu, near the fortress of Chuka, lat.  $27^{\circ} 14'$ , which is one hundred and forty feet in length, and which may be passed on horseback. This chain bridge in Boutan is composed of five chains covered with pieces of bamboo.

All travellers have spoken of the extreme danger of passing over these rope bridges, which look like ribands suspended above a crevice or an impetuous torrent. This danger is not very great, when a single person passes over the bridge as quickly as possible, with his body leaning forward: but the oscillations of the ropes become very strong, when the traveller is conducted by an Indian who walks quicker than himself; or when, frightened by the view of the water which he sees through the interstices of the bamboos, he has the imprudence to stop in the midst of the bridge, and lay hold of the ropes that serve as a rail. A bridge of *hamac* lasts generally in good condition only twenty or five and twenty years. It is necessary, however, to renew some of the ropes every eight or ten years. But in these countries the police is so negligent, that we often see bridges in which most of the pieces of bamboo are broken. On these old bridges travellers must proceed with great circumspection, to avoid holes, through which the whole body might slip. A few years before my abode at Penipé, the ha-

mac bridge of the Rio Chambo broke down all at once. This was owing to a very dry wind having succeeded long rains, in consequence of which all the ropes gave way at the same time. By this accident four Indians were drowned in the river, which is very deep and extremely rapid.

The ancient Peruvians constructed also bridges of wood, supported by piers of stone; though they most commonly satisfied themselves with bridges of ropes. These are extremely useful in a mountainous country, where the depth of the crevices, and the impetuosity of the torrents, prevent the construction of piers. The oscillatory motion might be diminished by lateral ropes fastened to the middle of the bridge, and stretched diagonally toward the bank. It is by a bridge of ropes, of extraordinary length, and on which travellers may pass with loaded mules, that a permanent communication has been established between Quito and Lima, after uselessly expending upwards of forty thousand pounds sterling, to build a stone bridge, near Santa, over a torrent, which rushes from the Cordillera of the Andes.

## COFFER

OF

P E R O T E.

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 PLATE XXXIV.
 

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THIS mountain of basaltic porphyry is less remarkable for its height, than the singular form of a small rock placed on the summit of the eastern side. This rock, resembling a square tower, bears, among the natives of the Azteck race, the name of *Nauhcampatepetl*, from *nauh-campa*, four parts, and *tepetl*, a mountain; and among the Spaniards that of Coffe of Perote. The summit of this mountain commands a very extensive and varied prospect over the plain of Puebla, and the eastern slope of the Cordilleras of Mexico covered with thick forests of liquidambar, arborescent ferns, and sensitive plants. From it we discern the harbour of Vera Cruz, the castle of St. John of Ulua, and the seacoasts. The Coffe does not enter into the limit of the perpetual snows. I found by a

barometrical measurement the highest of its summits to be 4088m. (2097 toises) above the level of the sea, which exceeds by 400 metres that of the peak of Teneriffe. I sketched the mountain from the vicinity of the great town of Perote, in the arid plain covered with pumice stone, which we crossed in ascending from Vera Cruz to Mexico. The summit of the Coffer is a naked rock, surrounded by a forest of pines. On climbing this summit, I remarked, that the oaks disappeared at the height of 3165 metres (1619 toises); but the pines, which in their leaves resemble the *pinus strobus*, are seen at the height of 3942 metres (2202 toises). Under each zone, the temperature and barometric pressure prescribe to the vegetable world the limits, which it cannot pass.



**MOUNTAIN**

OF

*I L I N I S S A.*

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PLATE XXXV.

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AMONG the colossal heights, which are seen from around the city of Quito, that of Ilinissa is one of the most majestic and picturesque. The summit of this mountain is divided into two pyramidal points, which, it is probable, were the wrecks of a volcano, that has fallen in. Their absolute elevation is 2717 toises. The mountain of Ilinissa is in the western chain of the Andes, in the parallel of the volcano of Cotopaxi; and joins the summit of Ruminahui by the Alto de Tiopullo, which forms a transverse link, whence the waters run off toward both the Pacific and the Atlantic oceans \*. The pyramids of Ilinissa are visible at an enormous distance in the plains, which form a part of the province of las Esme-

\* See above, page 3.

raldas. Their height, both above the plain of Quito and the seacoast, was trigonometrically measured by Bouguer ; and the French academicians determined, by the difference of height obtained in these two measurements, the absolute height of the city of Quito, and the approximative value of the barometric coefficient. Those natural philosophers, who interest themselves in the history of the progress of the sciences, will rank the name of Ilinissa with that of the Puy-de-dome, where Perrier, following the advice of Pascal, attempted first to measure the height of mountains by the aid of a barometer.

FRAGMENTS  
OF  
AZTECK HIEROGLYPHICKS,

DEPOSITED IN THE  
ROYAL LIBRARY OF BERLIN.

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PLATE XXXVI.

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THESE fragments are taken from some ancient manuscripts, that I purchased during my abode in Mexico. There can be no doubt, that they are lists formed by the collectors of tributes, *tlacalaquiltecani*; but is not easy to indicate the objects designated in these lists.

No. 1 makes part of a codex Mexicanus of agave paper, which is three or four metres in length; and appears to be a register of maize, gold ingots, and other productions, which composed the tribute, *tequitl*. I am absolutely ignorant what the painter meant to indicate by the great number of small squares symmetrically

disposed. In the second row, reckoning from right to left, we find four hieroglyphics, which follow each other in a periodical series. The days marked here and there denote the times at which the tribute was to be paid.

No. 2, 3, 4. What explanation can we give of these women's heads placed near the sign of 20? The cocks and turkeys, delineated in No. 3, might lead us to think, that these birds were equally known to the Mexicans before the conquest; if it were sufficiently proved, that the paintings, from which these figures are taken, date farther back than the 15th century. I have shown in another work\*, that the cock of the Indies, known in the islands of the South Sea, was introduced into America by the Europeans.

The *tlamama*, or porters, No. 5, appear to hold stalks of maize, or sugar-canes, in their hands. I shall not undertake to determine the species of animals beneath the *tlamama*, and somewhat resembling the *tochtli*, or Mexican rabbit.

No. 7 points out the kind of punishment, which was inflicted on the unhappy natives when they did not pay the tribute at the time prescribed. Three Indians, whose hands are tied behind their backs, appear to be condemned to

\* Political Essay, vol. 2, p. 452.

the gallows. The lists of tributes were placed in each parish, before the eyes of the *tequitqui*, or tributaries ; and the collectors were accustomed to add, at the bottom of the list, the nature of the punishment, to be inflicted on those who were not obedient to the law.



# HIEROGLYPHIC PAINTINGS

IN THE

*BORGIAN MUSEUM,*

AT VELETRI.

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PLATE XXXVII.

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WE have already\* spoken of the arrangement of the Codex Mexicanus, preserved in the Borgia Museum. As we cannot hope to see the whole of this Mexican ritual published, I have brought together on the same plate a great number of figures, remarkable for their forms, and their relations to the manners of a people both superstitious and ferocious.

No. 1. (Cod. Borg. fol. 11, MSS Fabreg. No. 18). The mother of mankind, the serpent woman, *Cihuacohuatl*, whom the first missionaries denote by the name of *Senora de nuestra carne*, or *Tonacacihua* (from *tonacayo*, our flesh,

\* Plate 27, page 34.

and *cihua*, woman). Compare the Codex Vaticanus, pl. 13, N. 2.

No. 2. The same serpent woman, the Eve of the Mexicans. The rabbit, *tochtli*, placed on the right, indicates the first year of the world, each cycle beginning by the sign of the rabbit. P. Fabrega pretends, in his Commentary, that the mother of mankind is represented in a state of humiliation, eating *cuitlatl* (κοπρος).

No. 3. (Cod. Borg. fol. 58, MSS No. 275). The Lord of the place of the dead, *Mictlan-teuhtli*\*, devouring a child.

No. 4. (Cod. Borg. fol. 24, MSS No. 98). Noah in his old age, with a long beard, *Huehuetonacateocipactli*; from *huehue*, old, *tonacayo*, our flesh, *teotl*, god, and *cipactli*. See the explanations given, page 23, and vol. xiii, p. 338. This same figure is found again in the Codex Borg. folio 60.

No. 5. (Cod. Borg. fol. 56, MSS No. 265). The same divinities as we find in the hideous group, plate 29; namely, the god of war, *Huitzilopochtli*, with a club in his hand, and the goddess *Teayamiqui*. They are pictured sitting on a human skull. I have copied only the goddess, holding in her left hand a kind of sceptre, which is terminated by a hand. This sceptre is called *Maquahuitl*, from *maitl*, a hand,

\* Plate 29, fig. 5, page 47

and *quahuítl*, wood. It is no doubt very remarkable, that we find in the Azteck paintings a hand of justice, like that which is represented on the seal of Hugh Capet\*, and which reminds us of the *manus erecta* of the Roman cohorts†.

No. 6. *Teocipactli*, the same figure as is represented No. 4. I have chosen it on account of the extraordinary shape of the forehead. The forehead of the natives of Mexico and Peru are in general singularly flattened, and the painters endeavour to exaggerate this character in representing heroical personages.

No. 7. (Cod. Borg. fol. 33, MSS No. 150). Five little imps, which remind us of the celebrated picture of the Temptation of St. Anthony. On the same page is represented a temple of *Quetzalcohuatl*, the triangular roof of which is surrounded by a serpent. The idol, placed in a niche, receives the offering of a human heart. By the side of the temple, we see the goddess of

\* Montfaucon, Monuments of the French Monarchy, vol. i, page 36; Menestrier, nouvelle Méthode raisonnée de Blason (Lyon, 1750) page 52; Dictionnaire de Trevoux, tom. iii, page 127; Gilbert Devarennés (Paris, 1635) page 184.

† Augustinus, Antiquitat. Romanor. Hispaniarumque in Nummis Veterum Dialogi (Antwerp 1654) p. 18; Lipsius de Militia Romana, page 41.

Hell, *Mictlanteuhcihua*, stretching out her arms toward the body of the victim.

No. 8. (Cod. Borg. fol. 47, MSS No. 210). The astrological sign *nahui Ollin tonatiuh*, the Sun in its four motions ; which, by prints of feet, or *xocpalli*, seems to remind us of the positions of the Sun at the zenith, in the equator, and at the solstices\*. At the side we find the dates of the days presided over by the asterisms *ozomatli*, ape ; *calli*, house ; and *quiahuatl*, rain. If these dates were 8 *rain*, 5 *house*, and 3 *ape*, they would answer, according to the disposition of the periodical series, to the days in which the Sun is at one of the tropics, at the equator, and in the zenith of the city of Mexico ; but the ciphers added to the hieroglyphics differ several units from those which we have just mentioned. The sign *ollin* is placed at the extremity of a cylindrical insect, which appears to be a millipede or scolopendra. I am ignorant of the signification of the astrological symbol, which resembles a cross.

No. 9. (Cod. Borg. fol. 59). A man and a woman folding children in their arms, and raising one hand toward Heaven.

No. 10. (Cod. Borg. fol. 23, MSS No. 94). The drinking devil, *Tlacatecolutl motlatlaperiani*,

\* See vol. xiii, page 352 and 399.

holding a heart in one hand, and drinking the blood of another heart, while a third is suspended from his neck. This hideous figure confirms what we have already advanced \* respecting the ferocity of the Mexican people.

\* Page 44.



MIGRATION  
OF  
THE AZTECK NATIONS,  
FROM A  
HIEROGLYPHIC PAINTING  
DEPOSITED IN THE ROYAL LIBRARY  
AT  
BERLIN.

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PLATE XXXVIII.

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THIS ill preserved fragment appears to have made part of a great picture, which formerly belonged to the collection of the Chevalier Boturini. The figures are very clumsily painted on *amatl*, or paper of *maguey* (agave americana). We behold in it a marshy country on the left, indicated by the hieroglyphic of water, *atl*; prints of feet, *xocpal-machiotl*, representing the migrations of a warlike people; arrows shot from one bank of a river toward the other; combats between

two nations, one of which is armed with bucklers, and the other naked and without means of defence. It is probable, that these combats designate some of those, which took place in the sixth century of our era, in the wars of the Aztecks against the Otomites and other hunting nations, that dwelt on the north and the west of the valley of Mexico. The figures placed near the hieroglyphic *calli*, house, perhaps indicate the foundation of certain towns. The bucklers of the Aztecks are ornamented with arms peculiar to each tribe, and have those appendages of leather, or cotton, well fitted to deaden the stroke of a dart, which are found on some Etruscan vases\*. The figures are disposed in symmetrical order. We might be surprised at seeing them use their left hand rather than their right; but we have had occasion already to remark, that the hands are often confounded in the Mexican paintings, as well as in several Egyptian bas-reliefs.

\* See plate 14, No. 2.

# VASES OF GRANITE

FOUND ON THE

*COAST OF HONDURAS.*

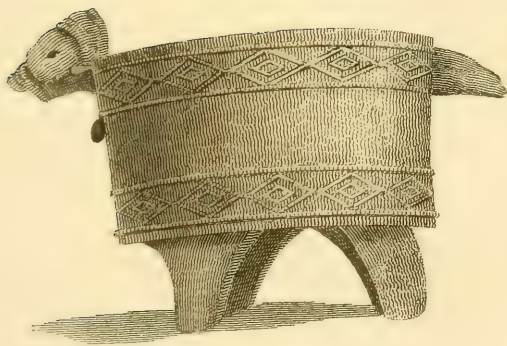
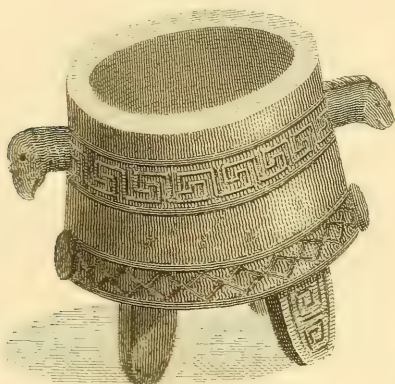
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PLATE XXXIX.

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THESE granite vases, which are four times as large as they appear in the 39th plate, are preserved in England in the collections of Lord Hillsborough and Mr. Brander. They were found on the Moschetto shore, in a country inhabited at present by a barbarous nation, entirely ignorant of sculpture. They are described by Mr. Thomas Pownal, in the interesting Memoirs published by the Antiquarian Society of London\*. I have introduced these drawings, to point out the analogy that exists between the ornaments with which they are decorated, and those on the ruins of Mitla. This analogy

\* Archæologia, or Miscellaneous Tracts relating to Antiquity, published by the Soc. of Antiquaries of London, vol. v, plate 26, p. 318.



*Vases of Granite found on the  
Coast of Honduras.*

*Pub<sup>d</sup> by Longman, Hurst, Rees, Orme, & Brown, Aug<sup>r</sup> 1814.*





entirely destroys the suspicion, that they were made after the conquest by the Indians, who attempted to imitate the form of some Spanish vase. We know, that the Toltecks, in their passage through the province of Oaxaca, penetrated even beyond the lake of Nicaragua. We may hence conjecture, that these vases, ornamented with the heads of birds and tortoises, are the work of some tribe of the Tolteck race. If we reflect on the form of the vessels in domestic use among the Spaniards of the 16th century, it is impossible to admit, that the soldiers of Cortez carried to Mexico vases similar to those, which Mr. Pownal has described.

## AN AZTECK IDOL,

## IN BASALT,

FOUND IN THE

VALLEY OF MEXICO.

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 PLATE XL.
 

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THIS small idol in porous basalt, which I have deposited in the cabinet of the king of Prussia, reminds us of the statue of the priestess, placed at the head of this part of our work \*. We find the same head-dress, which resembles the *calantica* of the heads of Isis ; the pearls of California, which surround the forehead ; and the bag tied with a knot, and terminated by two appendages that reach to the middle of the body. The circular hole in the breast appears to have served

\* Vol. xiii, plate 1 and 2, page 43.

as the receptacle of the incense (*copalli* or *xochitlenamactli*), which was burnt before the idols. I am ignorant what the figure holds in its left hand; the forms are highly incorrect, and every thing about it indicates the infancy of the art.

**AIR VOLCANO**

OF

**TURBACO.**

---

**PLATE XLI.**

---

IN order to avoid the excessive heats, and the diseases which take place during the summer at Carthagena, and on the arid coasts of Baru and Tierra Bomba, those Europeans, who are not seasoned to the climate, remove inland to the village of Turbaco. This small Indian village stands on a hill, at the entrance of a majestic forest, which extends toward the south and the east as far as the canal of Mahates and the river Magdalena. The houses are mostly built of bamboos, and covered with palm leaves. Here and there limpid springs rise out of a calcareous rock, which contains numerous fragments of

petrified coral, and are shaded by the splendid foliage of the *anacardium caracoli*, a tree of colossal size, to which the natives attribute the property of attracting from great distances the vapours floating in the atmosphere. As the soil of Turbaco is more than three hundred metres above the level of the ocean, a delightful coolness prevails, especially during the night. We resided in this charming spot in the month of April, 1801, when, after a toilsome passage from the island of Cuba to Carthagena, we were preparing ourselves for a long journey to Santa Fe de Bogota, and the elevated plain of Quito.

The Indians of Turbaco, who accompanied us in our herbalizations, often spoke to us of a marshy country, situate amidst a forest of palm trees, and called by the Creoles the little Volcanoes, *los Volcancitos*. They related, that according to a tradition still existing among them, this spot had formerly been in flames; but that a very pious man, vicar of the village, had succeeded by his frequent aspersions of holy water in extinguishing the subterraneous fire. They added, that, since this time, the fiery volcano had become a water volcano, *volcan de agua*. From our long residence in the Spanish colonies, we were familiar with the strange and marvellous stories, which the natives eagerly recite, to fix the



attention of travellers on the phenomena of nature ; though we knew that these stories were in general less indebted for their currency to the superstition of the Indians, than to that of the Whites, the mestizoes, and the African slaves ; and that the reveries of a few individuals, who reason on the progressive changes of the surface of the Globe, gradually assume the character of historical traditions. Without giving any credit to the existence of an extent of country in a former state of ignition, we were conducted by the Indians to the Volcancitos de Turbaco ; and this excursion made us acquainted with phenomena, much more important than any we could have expected.

The Volcancitos are situate six thousand metres to the east of the village of Turbaco, in a thick forest, abounding with balsam of Tolu trees, the *gustavia* with flowers resembling those of the *nymphaea*, and the *cavanillesia mocundo*, the membranous and transparent fruits of which resemble lanterns suspended at the extremity of the branches. The ground rises gradually forty or fifty metres above the village of Turbaco ; but as it is every where covered with vegetation, it is not possible to distinguish the nature of the rocks that repose on the shelly calcareous soil. The 41st plate represents the southern part of the plain, in which are found the *Volcancitos*.

This engraving was executed from a sketch made by one of our friends, Mr. Lewis de Rieux. This young artist, with whom we ascended the river Magdalena, was then attending his father, who, under the administration of Mr. d'Urquijo, was charged with the inspection of the bark trees of Santa-Fé.

In the centre of a vast plain, bordered by bromelia karatas, are eighteen or twenty small cones, in height not above seven or eight metres. These cones are formed of a blackish gray clay, and have an opening at their summits filled with water. On approaching these small craters, a hollow but very distinct sound is heard at intervals, fifteen or eighteen seconds previous to the disengagement of a great quantity of air. The force with which this air rises above the surface of the water may lead us to suppose, that it undergoes a great pressure in the bowels of the Earth. I generally reckoned five explosions in two minutes : and this phenomenon is often attended with a muddy ejection. The Indians assured us, that the forms of the cones undergo no visible change in a great number of years ; but the ascending force of the gas, and the frequency of the explosions, appear to vary according to the seasons. I found by analyses made by means both of nitrous gas and of phosphorus, that the disengaged air scarcely

contains a thousandth part of oxygen. It is azotic gas, much more pure than that which is generally prepared in our laboratories. The physical cause of this phenomenon is discussed in the historical narrative of our travels into the interior of the New Continent.

**VOLCANO**  
OF  
*CAYAMBE.*

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PLATE XLII.

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OF the various summits of the Cordilleras, the heights of which have been determined with any precision, Cayambe is the loftiest except Chimborazo. Bouguer and Condamine found its elevation to be 5901 metres (3208 toises) ; and the angles which I took in the Exido of Quito, to observe the progress of the terrestrial refraction at different hours of the day, confirm this determination. The French Academicians \* named this colossal mountain *Cayambur*, instead of *Cayambe-Urcu*, which is its real name ; the word *urcu* denoting, in the qquichua language, mountain, as *tepetl* in Mexican, and *gua* in Muysca. This error is repeated in every work, that gives a table of the principal heights of the Globe.

\* La Condamine, *Voyage à l'Equateur*, p. 163.

I have sketched Cayambe as it appears above the Exido of Quito, which is at the distance of thirty-four thousand toises. Its form is that of a truncated cone ; and reminds us of the outline of the *Nevado de Tolima*, represented in the fifth plate. Among the mountains covered with eternal snow, that surround the city of Quito, Cayambe, which is the most beautiful as well as the most majestic, never ceases to excite admiration at sunset, when the volcano of Guagua-Pichincha, situate to the west, or toward the Pacific Ocean, throws its shadow over the vast plain, which forms the foreground of the landscape. This plain, covered with grasses, is destitute of trees. A few bushes of barnadesia, durante, and barberry alone are scattered around ; with those beautiful calceolariæ, which belong almost exclusively to the southern hemisphere, and the western part of America.

Some distinguished northern artists have lately published a drawing of the cascade of the river Kyro, near the village of Yervenkye, in Lapland, through which, according to the observations of Maupertuis, and Mr. Swanberg, the polar circle passes. The summit of Cayambe is traversed by the equator. We may consider this colossal mountain as one of those eternal monuments, by which nature has marked the great divisions of the terrestrial Globe.







Volcano of Irazu

**VOLCANO**  
OF  
*J O R U L L O.*

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PLATE XLIII.

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**T**HE plate of which I am now about to give an explanation recalls to mind one of the most singular catastrophes in the physical history of our planet. Notwithstanding the frequent communications between the two continents, this catastrophe has remained almost unknown to the geologists of Europe. I have already given a description of it in my political Essay on the Kingdom of New Spain\*.

The volcano of Jorullo is situate, according to my observations, in latitude  $19^{\circ} 9'$ , longitude  $103^{\circ} 51' 48''$ , in the intendency of Valladolid, to the west of the city of Mexico, and thirty-six leagues distant from the ocean. It is 513 metres (263 toises)

\* Tom. 1, p. 248. See also my Collection of Astr. Obs. t. 1, p. 327, & tom. 2, p. 521.

above the surrounding plains. Its height is consequently triple that of the Monte Nuovo of Puzzuola, which rose up out of the earth in 1538. My drawing represents the volcano of Jurullo (Xorullo or Juruyo), surrounded by several thousand small basaltic cones, such as it appeared as we descended from Arco, and the hills of Aguas-arco, toward the Indian huts of the Playas. On the foreground is represented a part of the savannah in which this enormous excrescence was formed on the night of the 29th of September, 1759. It is the ancient level of this disrupted soil, now called by the name of Malpays. The fractured strata, seen in the foreground, separate the plain that has remained unbroken from the Malpays, which, bristling with small cones from six to nine feet in height, extends over four square miles. In the place where the thermal waters of Cuitimba and San Pedro descend toward the savannahs of Playas, the elevation of the broken strata is only twelve metres; but the ground raised up has the form of a bladder, and its convexity progressively increases toward the centre, so that at the foot of the great volcano the soil is elevated 160 metres above the Indian huts we inhabited in the Playas de Jorullo. The profile, published in the Geographical and Physical Atlas, which accompanies the historical narrative, will render this statement of the dif-



ferences in the level of the ground more easy to be understood.

The cones are so many funnels, which exhale a thick vapour, and communicate an insupportable heat to the surrounding air. They are called in this country, which is excessively unhealthy, by the name of the little ovens, *hornitas*. They contain nodules of basalt embedded in a mass of indurated clay. The slope of the great volcano, which is constantly burning, is covered with ashes. We reached the inside of the crater by climbing the hill of scorified and branching lavas, represented in the engraving toward the left, and which rises to a considerable height. We shall here observe as a remarkable fact \*, that all the volcanoes of Mexico are ranged in a line from east to west ; and which forms at the same time *a parallel of great elevations*. In reflecting on this fact, and comparing it with our observations on the *bochenuove* of Vesuvius, we are tempted to suppose, that the subterraneous fire has pierced through an enormous crevice, which exists in the bowels of the Earth between the latitudes of  $18^{\circ} 59'$  and  $19^{\circ} 12'$ , and stretches from the Pacific to the Atlantic Ocean.

\* Political Essay, tom. 1, p. 47.



# CALENDAR

OF THE

## *MUYSCA INDIANS,*

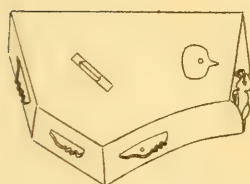
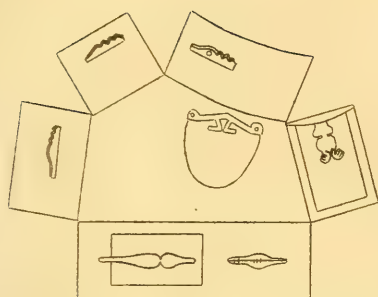
THE ANCIENT INHABITANTS OF THE PLAIN OF BOGOTA.

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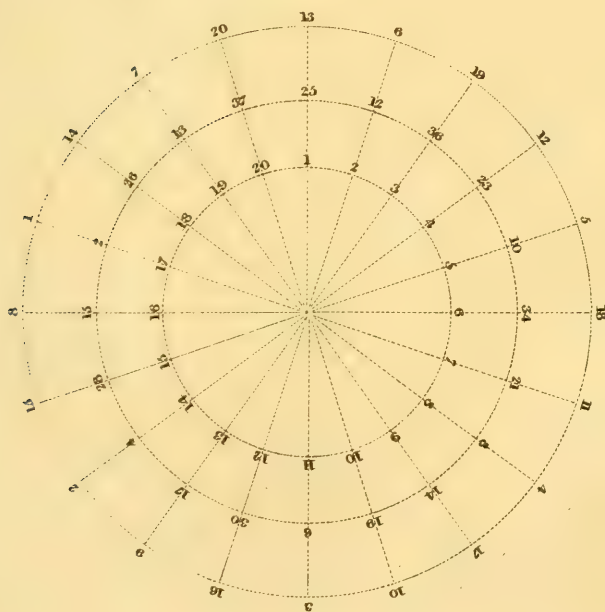
### PLATE XLIV.

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A STONE, covered with hieroglyphic signs of the lunar calendar, and representing the order in which the intercalations, that bring back the origin of the year to the same season, is made, is a monument so much the more remarkable, as it is the work of a people, whose name is almost entirely unknown in Europe, and who have been hitherto confounded with the wandering tribes of the savages of South America. For the discovery of this monument we are indebted to Don Jose Domingo Duquesne of Madrid, canon of the metropolitan church of Santa Fé de Bogota. This ecclesiastic, a native of the kingdom of New Grenada, and descended from a French family settled in Spain, was long the vicar of an Indian



1	Ata
2	Bosa
3	Mica
4	Muihica
5	Hisca
6	Ta
7	Guhupqua
8	Suhuza
9	Aca
10	Ubchihica
20	Guet



*Lunar Calendar of the Muzscas.*



village situate on the plain of the ancient Cundinamarca. His office having enabled him to gain the confidence of the natives, who are descendants of the Muyscas, he has endeavoured to collect all that tradition has preserved during three centuries concerning the state of those regions before the arrival of the Spaniards in the New Continent. He succeeded in procuring one of those sculptured stones, by which the Muysca priest regulated the division of time; he acquired the knowledge of the simple hieroglyphics, which denote both numbers and the lunar days; and he has written a statement of the knowledge he acquired, the fruit of long and laborious researches, in a memoir that bears the title of *Disertacion sobre el Kalendario de los Muyscas, Indios naturales del nuevo Reyno de Grenada*. This manuscript was communicated to me at Santa Fé, 1801, by the celebrated botanist Don Jose Celestino Mutis. Mr. Duquesne gave me permission to sketch the pentagonal stone, of which he has endeavoured to give an explanation; and it is this drawing, which has been engraven on the 4th plate.

I shall here offer a few desultory observations on the calendar of the Muysca Indians, from the materials contained in the Spanish memoir which I have just cited; and shall subjoin certain considerations relative to the analogy between this calendar and the cycles of Asiatic nations.

When the *Adalantado* Gonçalo Ximenez de Quesada, surnamed the conqueror, arrived, in 1537, from the banks of the Magdalena, at the lofty savannahs of Bogota, he was struck with the contrast, which he remarked between the civilization of the nations inhabiting the mountains, and the savage state of the hordes scattered along the sultry regions of Tolu, Mahates, and S<sup>a</sup>. Martha. On the elevated plain, where, in latitude 4° and 5°, the centigrade thermometer keeps constantly between 17 and 20 degrees during the day, and between 8 and 10 degrees at night, Quesada found the Muyscas, the Guanes, the Muzoes, and the Calimas, settle in communities, employed in agriculture, and clothed in cotton garments; while the tribes that wandered through the neighbouring plains, nearly on a level with the surface of the Ocean, appeared brutalized, destitute of clothes, without industry, and without arts \*. The Spaniards were surprised at seeing themselves transported into a country, where, on a soil of little fertility, the fields every where yielded plentiful harvests of maize, chenopodium quinoa, and *turmas*, or

\* *Historia general de las Conquistas del Nuevo Reyno de Grenada, por el Doctor D. Lucas Fernandez Piedrahita, p. 15.* (The author, who died Bishop of Panama, compiled this history from the manuscripts of Quesada, the Conqueror; Juan de Castellanos, vicar of Tunja; and the franciscan monks, Fray Antonio Medrano and Fr. Pedro Agueda)



potatoes. I shall not here examine whether, notwithstanding the introduction of corn and horned cattle, the plain of Bogota is less populous in our days than before the conquest; but shall only observe, that, when I visited the mines of gem salt at Zipaquira, I was shown the most certain indications of former culture in lands now left desolate, to the north of the Indian village of Sbua.

Among the different nations of Cundinamarca, that which the Spaniards designated by the name of Muysca, or Mozca, appears to have been the most numerous. The fabulous traditions of this nation go back almost to the distant epocha, when the Moon did not yet accompany the Earth; and when the plain of Bogota formed a lake of considerable extent, from the inundations of the river Funzha. In the description of the cataract of Tequendama\*, we have spoken of that marvellous personage, known in the American mythology under the name of Bochica, or Idacanzas, who opened a passage for the waters of the lake of Funzha, assembled the wandering tribes into a social state, introduced the worship of the Sun, and like the Peruvian Manco-Capac, and the Mexican Quetzalcoatl, became the legislator of the Muyscas. These same traditions relate, that Bochica, son and emblem of the Sun,

\* See vol. xiii, p. 72.

high priest of Sogamozo, or Iraca, seeing the chiefs of the different Indian tribes disputing for the supreme authority, advised them to choose for zaque, or sovereign, one among them called Huncahua, revered on account of his wisdom and justice. The advice of the high priest was universally adopted: and Huncahua, who reigned two hundred and fifty years, subdued the whole of the country that extends from the savannahs of San Juan de los Llanos to the mountains of Opon. Bochica, devoting himself to a life of severe penance, lived a hundred Muysca cycles, or two thousand years. He disappeared mysteriously at Iraca, to the east of Tunja. This town, which was then the most populous in the country, was founded by Huncahua, the first of the dynasty of the zaques of Cundinamarca: and took the name of Hunca, from its founder, which the Spaniards afterward changed into that of Tunca, or Tunja.

The form of government given by Bochica to the inhabitants of Bogota is very remarkable from its analogy with those of Japan and Thibet. The Incas of Peru united in their person the temporal and spiritual powers. The children of the Sun were both priests and kings. At Cundinamarca, at a period probably anterior to Manco-Capac, Bochica had constituted the four chiefs of tribes, Gameza, Busbanca, Pesca, and Toca, electors; and ordered, that, after his

death, these electors, and their descendants, should have the right of choosing the high priest of Iraca. The pontiffs, or lamas, the successors of Bochica, were considered as heirs of his virtue and sanctity; and such as Cholula, in the time of Montezuma, was to the Aztecks, Iraca had been to the Muyscas. The people thronged in crowds to offer presents to the high priests, visiting those places which were consecrated by the miracles of Bochica; and amidst the horrors of the most sanguinary warfare, the pilgrims enjoyed the protection of those princes, through whose territories they passed to visit the sanctuary (*chunsua*), and prostrate themselves at the feet of the lama, who presided there. The temporal chief, called *zaque* of Tunja, to whom the *zippa*, or princes of Bogota paid an annual tribute, and the pontiff of Iraca, were consequently two distinct potentates, as the emperor and *dairi* are in Japan. I have deemed it important, to cite in this place those historical incidents, which are almost unknown in Europe, in order to excite some interest in favour of a nation, of whose calendar we propose to give an explanation.

Bochica was not only considered as the founder of a new worship, and lawgiver of the Muyscas; as emblem of the Sun he regulated the seasons, and to him was attributed the invention of the calendar. He had prescribed also the order of the sacrifices, which were to be celebrated at the

end of the small cycles, on account of the fifth lunar intercalation. In the empire of the zaque, the day (*sua*) and the night (*za*) were divided into four parts; namely, *sua-mena*, from sunrise till noon; *sua-meca*, from noon till sunset; *zasca*, from sunset till midnight; and *cagui*, from midnight till sunrise. The word *sua*, or *zuha*, denotes, in the Muysca language, both the day and the Sun. From *Sua*, which is one of the surnames of Bochica, is derived *sue*, a European, or white man\*; a singular denomination, which takes its origin from the circumstance, that the people, on the arrival of Quesada, considered the Spaniards as children of the Sun, *Sua*.

The least division of time among the Muyscas was a period of three days. The week of seven days was unknown in America, as well as in part of eastern Asia. On the first day of this small period a great market was held at Turmequé.

The year (*zocam*) was divided into moons. Twenty moons composed the civil year, such as was commonly observed in ordinary concerns. The year of the priests contained thirty-seven moons, and twenty of these great years formed a Muysca cycle. In order to distinguish the lunar days, the moons, and the years, periodical series

\* *Gramatica de la Lingua general del nuevo Reyno llamada Mosca, por el Padre Fray Bernardo de Lugo* (professor of the Chibcha language at Santa-Fé de Bogota), Madrid, 1619, p. 7.

were employed, the ten terms of which were numbers. As the words which designate these terms exhibit several very remarkable particularities, we shall enter into some details respecting the language of Bogota.

This tongue, the use of which has become nearly extinct since the end of the last century, had been rendered the prevailing language by the victories of the *zaque* *Huncahua*, that of the *zippas*, and the influence of the great lama of *Iraca*, over a vast extent of country, from the plains of the *Ariari* and the *Rio Meta* to the north of the *Sogamozo*. As the language of the Inca is called *Qquichua* at Peru, that of the *Moscas*, or *Muyscas*, is known in the country under the denomination of *Chibcha*. The word *muysca*, of which *mosca* appears to be a corruption, signifies *man* or *person*; but the natives apply it generally only to themselves: and this expression is like that of the *Qquichua* word *runa*, which denotes an Indian of the copper-colored race, and not a white, or a descendant of European colonists. The *Chibcha*, or *Muysca* language, which, at the time of the discovery of the New Continent, was, together with that of the Inca and the Caribbean, one of the most general idioms of South America, forms a singular contrast with the Azteck language, so remarkable from the reduplication of the syllables, *tetl*, *tli*, and *itl*. The Indians of Bogota, or *Bacata*, (*extremity of the*



*fields or cultivated lands*) were unacquainted both with the *l* and *d*. Their language is characterized by the frequent repetition of the syllables *cha*, *che*, *chu*; as for instance, *chu chi*, we; *hy-cha chamique*, myself; *chigua chiguitynynga*, we ought to fight; *muysca cha chro guy*, a worthy man, the particle *cha* added *muysca*, denoting the male sex.

The numbers, of which the first ten were chosen as terms of periodical series fitted to denote the great and the small divisions of time, are, in the *Chibcha* language, one, *ata*; two, *bozha*, or *bosa*; three, *mica*; four, *mhuyca*, or *muyhica*; five, *hicsca*, or *hisca*; six, *tu*; seven, *qhupqa*, or *culupqua*; eight, *shuzha*, or *suhuza*; nine, *aca*; ten, *hubchibica*, or *ubchihica*. Above ten, the Muysca Indians add the word *quihicha* or *qhicha*, which signifies foot. To express eleven, twelve, and thirteen, they say, *foot one*, *foot two*, *foot three*, *quihicha ata*, *quihicha bosa*, *quihicha mica*. These simple expressions intimate, that, after having reckoned by the fingers of both hands, they continue to count by the toes of the feet. We have already observed, in speaking of the calendar of the nations of the Mexican race, that the number twenty, which corresponds to that of the fingers and toes of the hands and feet, acts a great part in American enumeration. In the *Chibcha* language, twenty is denoted by *foot ten*, *quihicha ubchihica*; or by the word

*gueta*, which is derived from *gue*, *house*. They afterward reckon twenty and one, *guetas asaqi ata*; twenty-two, *guetas asaqi bosa*; twenty-three, *guetas asaqi mica*, as far as thirty, or twenty plus (*asaqui*) ten, *guetas asaqi ubchihica*; forty, or two twenties, *gue-bosa*; sixty, or three twenties, *gue-mica*; eighty, *gue-muyhica*; a hundred, or five twenties, *gue-hisca*. We shall here observe, that the Aztecks, after the units, which resemble the nails of the Etruscans, had a cipher, or simple hieroglyphic, only for twenty, for the square of twenty, or four hundred, and for the cube of twenty, or eight thousand. I like to dwell on this uniformity of the nations of both Americas, in the first display of their simplest ideas, and in the methods fitted for the graphical expression of numerical quantities above ten: which uniformity is so much more worthy of attention, as it denotes a system of numeration very different from that which we find in the ancient continent; from the Greeks, whose notation was already less imperfect than that of the Romans, to the Thibetans, the Indians, and the Chinese, who dispute with each other the honor of that admirable invention of ciphers the value of which changes with their position.

Amidst the great number of erroneous ideas respecting the languages of nations who have made but little progress in civilization, there is none more extravagant than the assertion of

Pauw, and some other equally systematic writers, according to whom no indigenous nation of the new continent knows how to reckon in its own idiom above three\*. We are at present acquainted with the numerical systems of forty American languages, and the work of Abbé Her-vas alone, the *Arithmetic of all Nations*, exhibits near thirty. In studying these different languages we observe, that, when nations rise above their first rude state, their farther progress establishes scarcely any sensible difference in their manner of expressing quantities. The Peruvians had at least as much skill as the Greeks and Romans, in denoting in their language numbers of several millions; they had even, in order to express a million, a single word, not compounded, *hunu*, to which the idioms of the old world offer no one analogous. *Huc*, one; *iscay*, two; *qimça*, three; ——— *chunca*, ten; *chunçaca huniyoc*, eleven; *chunca iscayniyoc*, twelve; ——— *iscaychunca*, twenty; *qimça chunca*, thirty; *tahua chunca*, forty; ——— *pachac*, a hundred; *iscaypachac*, two hundred; ——— *huaranca*, one thousand; *iscay-huaranca*, two thousand; ——— *chuncahuaranca*, ten thousand; *iscay-chunca-huaranca*, twenty thousand; *pachachuaranca*, a hundred thousand; *hunu*, a million; *iscay hunu*,

\* *Recherches Philosophiques sur les Américains*, Part 5, sect. 1, tom. 2, p. 162 (ed. of 1769).

two millions; *qimça hunu*, three millions. — This same simple and regular method is observed in several other American languages, in which the numerical expressions have no other defect, than being extremely long, and very difficult to be pronounced by European organs. The need of reckoning is felt in a state of society greatly anterior to that, which we so vaguely call the state of civilization.

Among that multitude of nations of the new continent, with those modes of numeration we are acquainted, there are some, who, according to the missionaries, cannot count above twenty, or thirty; and who denote by the term *many* whatever exceeds these numbers. But we are assured at the same time, that, to designate a hundred, these nations make small heaps of maize\* of twenty grains each; which evidently proves, that the Jaruroes of the Oronoco, and the Guaranis of Paraguay, reckon by twenties, as well as the Mexicans and the Muyscas; and that from stupidity, or rather from that extreme mental indolence peculiar to the most intelligent savages, they facilitate to themselves the numeration of three twenties, or four twenties, by reckoning like children, either by the toes and fingers of the feet and hands, or forming heaps of maize.

\* Hervas, *Idea del Universo Aritmetica di tutte le Nazioni conosciute*, tom. xix, p. 96, 97, and 106.

When travellers assert, that whole nations in America do not count above five, we ought to pay no more credit to this assertion, than we should to a Chinese, were he to report, that Europeans do not reckon above ten, because seven-teen and eight-teen are composed of ten and units. We must not confound the pretended impossibility of expressing great quantities, with the limits prescribed by the genius of the different languages to the numbers of the uncompounded numerical signs. These limits are attained at five, at ten, or at twenty, according to the disposition of the people to stop, in reckoning the units, at the fingers of one hand, those of both, or at the fingers and toes together.

In the idioms of the American nations the most remote from the unfolding of their faculties, six is expressed by *four with two*, seven by *four with three*, eight by *five with three*. Such are the languages of the Guaranis and the Luloes. Other tribes, already somewhat more advanced, for instance the Omaguas, and in Africa the Yalofs and the Foulahs, make use of words which signify both *hand* and *five*, as we employ the word ten. With these seven are expressed by *hand* and *two*, and fifteen by *three hands*. In Persian *péndji* signifies five, and *péntcha* the hand. In the Roman ciphers we observe some traces of a system of quinary numeration; the



units are extended to five, which has a peculiar sign, as well as fifty, and five hundred\*. Among the Zamucas, as well as among the Muyscas, eleven are called *foot-one* ; twelve, *foot-two* ; but the remainder of the numeration of these nations is of a fatiguing length, because, instead of simple words they make use of puerile circumlocutions. They say, for instance, the *hand finished*, for five ; *one of the other (hand)*, for six ; the *two hands finished*, for ten ; and *the feet finished*, for twenty. This last number is sometimes identical with the word *man*, or *person*, to indicate, that the two hands and feet constitute the whole individual. Thus, among the Jaruroes, *noenipume*, derived from *noeni*, two, and *canipume*, man, signifies *two men*, and also the number forty. The Sapiboconoes have no simple expression for a hundred, or a thousand : they say for ten, *tunca* ; for a hundred, *tunca-tunca* ; and for a thousand, *tunca-tunca-tunca*. They form squares and cubes by reduplication, as the Chinese form their plural, and the Biscayans their superlative. Finally, the groups of twenty units, or the twenties of the Muyscas, of the Mexicans, and so many other nations of America, are found in the old world among the Biscayans, and the inhabitants of Armorica. The first reckon : one, *bat*, or *unan* ; two, *bi*, or *daou* ; three, *iru*, or *tri* ; twenty,

\* Hervas, p. 28, 96, 102, 105, 112, 116, and 127 . Mungo Park's Travels, French translation, tom. i, p. 25 and 95.

*oguei*, or *hugent* ; forty, *berroguei*, or *daouhgent* ; sixty, *iruroguei*, or *trihugent*. It is interesting, to trace the formation of the small groups of five, ten, or twenty of these systems of numeration in their different gradations ; all nevertheless presenting that same uniformity of feature, by which all the inventions of mankind in the first ages of its social existence are characterized.

Mr. Duquesne has made various etymological researches on the words, which denote *numbers* in the Chibcha language. He asserts, “that all these words are significant ; that all depend on roots, which relate, either to phases of the Moon in its increase or wane, or to objects of agriculture or worship.” As no dictionary of the Chibcha language exists, we cannot verify the justness of this assertion ; we cannot be too mistrustful of etymological researches, and shall satisfy ourselves with here presenting the significations of the numbers from one to twenty, as they are given in the manuscript which I brought from Santa Fé. We shall only add, that P. Lugo, without entering into other discussions, relates, in his grammar of the Chibcha language, that the word *gue* denotes a *house* ; and that he finds it unaltered in *gue-ata* (by syncope *gueta*), twenty, one house ; *gue-bosa*, two twenties, forty, or two houses ; *gue-hisca*, five twenties, a hundred, or five houses.

1. *Ata*, of doubtful etymology ; this word is perhaps derived from an old root, which signifies water, like the *atl* of the Mexicans. Hieroglyphic : a frog. The croaking of these animals, very frequent on the plain of Bogota, indicates the approach of the season for sowing maize and guinoa. The Chinese denote the first, *tsé*, water, by a water-rat, and not by a frog.

2. *Bosa*, surrounding. The same word signifies a sort of enclosure, to protect the fields from noxious animals. Hieroglyphic : a nose with extended nostrils, part of the lunar disk figured as a face.

3. *Mica*, changeable ; according to another etymology, what is chosen. Hieroglyphic : two eyes open, another part of the lunar disk.

4. *Muyhica*, whatever is black, a cloud threatening a tempest. Hieroglyphic : two eyes closed.

5. *Hisca*, repose. Hieroglyphic : two figures united, the nuptials of the Sun and Moon. Conjunction.

6. *Ta*, harvest. Hieroglyphic : a stake with a cord, alluding to the sacrifice of *Guesa* tied to a pillar, which served perhaps as a gnomon.

7. *Cuhupqua*, deaf. Hieroglyphic : two ears.

8. *Suhuza*, a tail. Mr. Duquesne is ignorant of the signification of this cipher, as well as of the following word.

9. *Aca*. Hieroglyphic : two frogs coupled.

10. *Ubchihica*, resplendent Moon. Hieroglyphic: an ear.

20. *Gueta*, a house. Hieroglyphic: a frog extended.

The numerical hieroglyphics are engraved on the 44th plate, fig. 4; and the explanations we have just given are those preserved by tradition among a small number of Indians, whom Mr. Duquesne had found instructed in the calendar of their ancestors. Those who have studied the keys of the Chinese language, and the little we know of their origin, will not consider the explanations of the American ciphers as altogether chimerical. The characteristic features are gradually effaced by a long use of signs. Who, at the present day, would recognise in the form of the Hebrew and Samaritan letters that of the simple hieroglyphics of animals, houses, and weapons, which appears to have given them birth? Our Thibetan or Hindoo ciphers, falsely called Arabian, contain no doubt some mysterious meaning. Among the Indians of Bogota, some traits of an image are doubtless preserved in *bosa*, *mica*, *hisca*, *ubchihica*, and *gueta*. The last hieroglyphic cipher is almost identical with the Indian sign of four\*.

It is curious to find ciphers among a semi-

\* Hager, *Memoria sulle Cifre de la Cina*. (Mines de l'Orient, t. 2, p. 73.)

barbarous people, unacquainted either with paper or writing. The *magney* (agave americana) is indigenous in both Americas; yet it is only among the people of the Azteck and Tolteck race, that the use of paper was as well known as it has been from the remotest times in China and Japan. When we recollect what difficulty the Greeks and Romans found to procure papyrus, at a period even when literature was in its full splendor, we almost regret seeing the materials of paper so common among American nations, who were ignorant of syllabic writing, and who had only rude paintings, astrological reveries, and the traces of an inhuman system of rites, to transmit to posterity.

If it be true, as Mr. Duquesne asserts, that in the Chibcha idiom the words denoting the numbers have common roots with other words, which indicate the phases of the Moon, or objects relative to rural life, this fact would be one of the most singular in the philosophical history of languages. We may conceive, that an accidental resemblance of sounds is sometimes manifested between numerical words, and things which have no connection with numbers, as in *neuf*, nine (*novem*, in Sanscrit *nava*), and *neuf*, new (*novus*, in Sanscrit, *nava*); *acht*, in German, eight, and *achtung*, esteem; *êx*, six, and *êx*, the preposition *from*; *bosa*, in Chibcha, two, and *bosa*, the preposition *for*. In the same manner



we may conceive how, in languages rich in figurative expressions, the words *two*, *three*, and *seven*, may be applied to the ideas of a yoke (*jugum*), of *all powerful* (*trimurti* of the Hindoos), of enchantment, and misfortune : but is it possible to admit, that, when man in an uncultivated state first feels the necessity of reckoning, he calls four a *black thing* (*muyhica*) ; six, *harvest* (*ta*) ; and twenty, a *house* (*gue* or *gueta*) ; because in the arrangement of a lunar almanack, from the recurrence of the ten terms of a periodical series, the term *four* precedes by one day the conjunctions of the Moon ; or because the harvest is reaped *six* months after the winter solstice ? In all languages a certain independence is observed between the roots which designate the numbers, and those which express other objects of the natural world ; and we must suppose, that, wherever this independence disappears, two systems of numeration exist, one of which is posterior to the other ; or that the etymological affinities, which were presumed to be discovered, are only apparent, because they rest on figurative significations. P. Lugo, who wrote in 1618, informs us indeed, that the Muyscas had two modes of denoting the number twenty ; and that they said either *gueta*, house, or *quihicha ubchihica*, *foot ten* ; but we shall enter no farther into discussions foreign to the object of this work. What we know with cer-

tainty respecting the lunar calendar of the Muyscas, and the origin of their numerical hieroglyphics, has no need of being supported by arguments taken from the grammar of a language, which we may almost consider as dead.

We have already seen, that the Muyscas had neither the *decades* of the Chinese and the Greeks, the *half-decades* of the Mexicans and the people of Benin \*, the small periods of nine days of the Peruvians, the *ogdoades* of the Romans, nor the weeks of seven days (*schebuas*) of the Hebrews, which we find in Egypt, and in India, but which were known neither among the inhabitants of Latium and Etruria, nor among the Persians and Japanese. The Muysca week was distinguished from all known in the history of chronology; it had only three days. Ten of these groups formed a lunation, called *suná*, *high road*, *paved road*, *dyke*, on account of the sacrifice which was celebrated every month, at the period of the full Moon, in a public place, to which in every village the high road (*suná*) led from the house (*tithua*) of the chief of the tribe.

The *suná* did not begin at the New Moon, as among the greater part of the nations of the old world; but on the day after the full Moon, of which the hieroglyphic was a frog, represented on the *intercalary stone* (Pl. 44, fig. 1 a). The

\* Palin, de l'Etude des Hieroglyphes, tom. 1, p. 52.

words *ata*, *bosa*, *mica*, and their graphic signs, arranged in three periodical series, were made use of to denote the thirty days of a lunation ; so that *mica*, like the *quartidi* of the French republican calendar, was the fourth, fourteenth, and twenty-fourth day of the month. The same custom was observed among the Greeks ; who added however a couple of words, to distinguish whether the number belonged to the *month beginning* μηνὸς ἀρχομένου, or the *middle of the month*, μηνὸς μεσοῦντος, or to the *month ending* μηνὸς φθίνοντος. As the small festivals (*feiræ*), or the market days, returned every three days, each, during the course of a Muysca month, was governed by a different sign ; for the two periodical series of three and ten terms, that of the weeks and the *suna*, have no common divisor, and can coincide only after three times ten days. According to the following table, in which the small festivals are distinguished by italic characters, *culupqua* (two ears) falls in the last quarter ; *muyhica* (two eyes shut) and *hisca* (junction of two figures ; nuptials of the Moon, *chia*, and of the Sun, *sua*) correspond to the period of the conjunction ; *mica* (two eyes open) denotes the first quarter ; and *ubchihica* (an ear) the full Moon. The relation we here find between the thing and the hieroglyphic, between the phases of the Moon and the signs of the lunar days, evidently prove, that these signs,

which served as real ciphers, were invented at a time when the mode of periodical series was already applied to the calendar. Among the Egyptians, the hieroglyphics of numbers appear to be independant of those of the lunar phases. According to Horapollo, the image of a star indicated the number five, either on account of the diverging rays, which the stars of the first and second magnitude present to the view, or by a mystic allusion to the regimen of the world by five stars. The representative of ten was a horizontal line placed on a perpendicular line. A distinguished person, who had the satisfaction of examining on the spot the monuments of Upper and Lower Egypt, who has carefully drawn and described them, and who from his situation was enabled to compare more hieroglyphics than any antiquary of our own times, M. Jomard, is now employed on an extremely interesting work respecting the system of numeration of the Egyptians.

*Lunar days of the Suna of the Muysca Indians  
divided into ten small periods of three days.*

First Series .....	Ata. Bosa. Mica. Muyhica. Hisca. Ta. Cuhupqua *. Last quarter. Suhuza Aca. Ubchihica.
Second Series .....	Ata. Bosa. Mica. Muyhica. Hisca *. Conjunction. Ta. Cuhupqua. Suhuza. Aca. Ubchihica.
Third Series: .....	Ata. Bosa. Mica *. First quarter. Muyhica. Hisca. Ta. Cuhupqua. Suhuza. Aca. Ubchihica *. Full moon.



Twenty moons, or *sunas*, forming the vulgar year of the Muyscas, called *zocam*, we conceive, that the *zocam* was only a small lunar cycle, and not a year in the real sense of the words *annus*, *annulus*, ἐνιαυτός, which suppose the return of a star to the point from which it departed. The *zocam* and the great cycle of twenty intercalary years probably owe their origin only to a preference given to the number twenty, *gueta*. Beside the *zocam*, the Muyscas had an astronomical cycle, a year of the *priests*, appointed for religious festivals, and containing thirty-seven moons ; as well as a rural year, which was reckoned from one season of rains to another.

The *sunas* had no peculiar denomination, as we find among the Egyptians, the Persians, the Hindoos, and the Mexicans ; they were distinguished only by their number. This custom appears to me the oldest in eastern Asia ; it is preserved even in our days among the Chinese, and was followed by the Jews till the period of the Babylonian captivity. But the inhabitants of Cundinamurca did not reckon in their three calendars, rural, civil and religious, as far as twelve, twenty, or thirty-seven ; they employed for the *sunas*, as well as for the days of the same moon, only the first ten numbers and their hieroglyphics. The first month of the second agricultural year was governed by the sign *mica*, three ; the third month of the third year, by the

sign *cuhupqua*, seven ; and the rest in like manner. This predilection for periodical series, and the existence of a cycle of sixty years, which is equal to the seven hundred and forty sunas contained in the cycle of twenty *years of the priests*, appear to reveal the Tartarian origin of the nations of the new continent.

As the rural year was reckoned to be composed of twelve *sunas*, the *xeques* added, unknown to the people, at the end of the third year, a thirteenth month, analogous to the *jun* of the Chinese \*. The table of the Muysca moons we are about to lay down, proves, that, by the employment of the periodical series, this intercalary *suna* was governed, in the first indiction, by *cuhupqua*. It is this sign, which was called the *deaf* moon, because it did not count in the fourth series, which, without the use of a *complementary term*, should have commenced, not by *suhuza*, but by *cuhupqua*. This mode of intercalation, which is found in the north of India, and according to which a lunar embolismic year of three hundred and eighty-three days twenty-one hours follows two common lunar years of three hundred fifty-four days eight hours, is that which the Athenians followed before Meton ; it is the *dieteride*, in which was intercalated, after the month *Posideon*, a Ποσειδεῶν δεύτερος.

\* Souciet and Gaubil, *Observ. Mathém.* tom. 1, p. 183.

Herodotus \*, in his eulogium on the solar calendar of the Egyptians, explains himself very clearly on this simple, though very imperfect method: *οσω Ἕλληνες μὲν διὰ τρίτου ἔτεος ἐμβολιμον ἐπεμβάλλουσι, τῶν ὥρέων εἰνέκην.*

• Herod. lib. ii, cap. 4, ed. Wesselin., 1763, p. 105 : Censorin. de Die natali, c. 18 : Ideler, Histor. Untersuchungen, p, 176.

# THREE FORMS OF ZOCAMS OF THE CALENDAR OF THE MUYSCAS.

Rural Years of Twelve and Thirteen Months.		Years of the Priests of Thirty-seven Moons.		Vulgar Years of Twenty Moons.	
I. <i>Ata</i> .....  Common Year....	1	I. <i>Ata</i> .....	1	I. <i>Ata</i> .....	1
	2	Bosa .....	2		2
	3	Mica .....	3		3
	4	Muyhica .....	4		4
	5	Hisca .....	5		5
	6	Ta .....	6	Harvest. ....	6
	7	Cuhupqua. ....	7		7
	8	Suhuza .....	8		8
	9	Aca .....	9		9
	10	Ubchihica .....	10		10
	11	<i>Ata</i> .....	11		11
	12	Bosa .....	12		12
II. <i>Mica</i> .....	1	Mica .....	13		13
	2	Muyhica .....	14		14
	3	Hisca .....	15		15
	4	Ta .....	16		16
	5	Cuhupqua .....	17		17
	6	Suhuza .....	18	Harvest. ....	18
	7	Aca .....	19		19
	8	Ubchihica .....	20		20
	9	<i>Ata</i> .....	21		
	10	Bosa .....	22	II. <i>Ata</i> .....	1
	11	Mica .....	23		2
	12	Muyhica .....	24		3
III. <i>Hisca</i> .....	1	Hisca .....	25		4
	2	Ta .....	26		5
	3	Cuhupqua .....	27		6
	4	Suhuza .....	28		7
	5	Aca .....	29		8
	6	Ubchihica .....	30	Harvest .....	9
	7	<i>Ata</i> .....	31		10
	8	Bosa .....	32		11
	9	Mica .....	33		12
	10	Muyhica .....	34		13
	11	Hisca .....	35		14
	12	Ta .....	36		15
Deaf Month .....	13	Cuhupqua* .....	37	Embolismic Month	16
IV. <i>Suhuza</i> .....	1	II. <i>Suhuza</i> .....	1		17
	2	Aca .....	2		18
	3	Ubchihica .....	3		19
	4	<i>Ata</i> .....	4	III. <i>Ata</i> .....	20
					1

We have already observed, that the Mexicans intercalated in a much more exact and regular manner, while the Peruvians rectified their lunar year from time to time by observations of the solstices and the equinoxes, made by means of cylindrical towers erected on the mountain of Carmenga near Cuzco\*, which served to take azimuths.

Among the Muyscas, it is to the singular use of numbers, the series of which has two terms less than the rural year contains moons, that we must attribute the imperfection of a calendar, in which, notwithstanding the intercalation of the thirty-seventh month, *cuhupqua*, the harvest, during six years, falls every year in a month of a different denomination. Thus the *xeques* announced every year by what sign the *month of the ears of maize* should be presided, which corresponds to the *Abib* or *Nisan* of the calendar of the Hebrews. As the power of a class of society is often founded on the ignorance of the other classes, the lamas of Iraca preferred an uncouth calendar, in which the eighth month (October) was sometimes called the third, sometimes the fifth; and in which the differences of season, sufficiently sensible as they are on the plain of Bogota, notwithstanding the proximity of the equator, did not coincide with the *sunas* of the

\* Nieremberg, p. 139; Cieça, p. 230.



same name. The priests of Thibet and of Indostan know in the same manner how to take advantage of this multiplicity of the signs that govern the years, months, lunar days, and hours; they announce them to the people, in order to levy a tax on their credulity \*.

The object of the intercalation of the Muyscas was to bring back to the same season the commencement of the rural year, and the festivals which were celebrated in the sixth month, the name of which was consecutively *sunata*, *sunasuhaza*, *sunaubchihica*. Mr. Duquesne thinks, that the beginning of the *zocam* was, as among the Peruvians, the Hindoos, and the Chinese, the full moon that follows the winter solstice; but this tradition is uncertain. The first cipher, *ata*, represents water, symbolically denoted by a frog. Among the Chinese, the first asterism, in the cycle of TSE, is also that of water, and it corresponds to our sign of Aquarius †.

In the same manner as among the nations of Tartarian race ‡ the cycle of sixty years, governed by twelve animals, was divided into five parts, the cycle of the Muyscas, of twenty years

\* Le Gentil, Voyage dans l'Inde, tom. 1, p. 207.

† See vol. xiii, p. 338.

‡ See vol. xiii, p. 321 and 371; Dupuis, Origine des Étoiles, tom. 3, pl. 1, p. 44; Bailly, Astronomie Indienne et Orientale, 1787, p. 29.

of thirty-seven *sunas*, was divided into four small cycles ; the first of which closed with *hisca*, the second with *ubchihica*, the third with *quihicha hisca*, and the fourth with *gueta*. These small cycles represented the four seasons of the great year. Each of them contained one hundred and eighty-five moons, which corresponded with fifteen Chinese and Thibetan years, and consequently with the real *indictions* observed in the time of Constantine. In this division by sixty and by fifteen the calendar of the Muyscas approaches much nearer that of the people of eastern Asia, than the calendar of the Mexicans, who had cycles of four times thirteen or fifty-two years. As each rural year of twelve and thirteen *sunas* was denoted by one of the ten hieroglyphics represented in the fourth figure, and the series of ten and fifteen terms has a common divisor, the *indictions* were constantly terminated by the two signs of *conjunction* and *opposition*. We shall not stop here to show how the hieroglyphic of the year, and the indication of the cycle of sixty years to which that year belonged, might serve to regulate the chronology, as we have already explained it in treating of the relations of the calendars of Mexico, Thibet, and Japan.

The beginning of each *indiction* was marked by a sacrifice, the barbarous ceremonies of which, from the little we know, appear all of them to

have a connexion with astrological ideas. The human victim was called *guesa*, wandering, houseless, and *quihica*, door, because his death announced as it were the opening of a new cycle of a hundred and eighty-five moons. This denomination reminds us of the Janus of the Romans, placed at the *gates* of Heaven, and to whom Numa dedicated the first month of the year, *tanquam bicipitis dei mensem* \*. The *guesa* was a child torn from the paternal home. He must necessarily be taken from a certain village, situate in the plains called at the present day the Llanos de San Juan, which extend from the eastern slope of the Cordilleras to the banks of the Guaviare. It was from this same country of the east that Bochica, the emblem of the Sun, came, when he made his first appearance among the Muyscas. The *guesa* was most carefully educated in the temple of the Sun at Sogamozo, till the age of ten years ; he was then made to go out to walk in the paths, which Bochica had trodden, at the period when, in his instructions to the people, he had consecrated those spots by his miracles. At the age of *fifteen* years, when the victim had attained a number of *sunas* equal to that contained in the indiction of the Muysca cycle, he was sacrificed in one of those circular places in the centre of which was an elevated

\* Macrobius, Lib. i, c. 13.

column. The Peruvians were acquainted with gnomonic observations. They had a peculiar veneration for the columns erected in the city of Quito, because the Sun, as they asserted, "placed himself directly on their summits, and the shadows of the gnomon there were shorter than those in the rest of the empire of the Inca." Might not the piles and columns of the Muyscas, figured in several of their sculptures, have served in the same manner to mark the length of the equinoxial and solstitial shadows? This supposition is so much the more probable, as, among the *ten signs of the months* we twice find, in the ciphers *ta* and *suhuza*, a cord added to a stake; and as the Mexicans were certainly acquainted with the use of the linear gnomon \*.

At the time of the celebration of the sacrifice, which marked the opening of a new indiction, or of a cycle of fifteen years, the victim, *guesa*, was led in procession by the *suná*, which gave its name to the lunar month, toward the column that appears to have served to measure the solstitial or equinoxial shadows, and the passages of the Sun through the zenith. The priests, *xequés*, in masks like the Egyptian priests, followed the victim. Some represented Bochica, who is the Osiris, or the Mithras, of Bogota, and to whom

\* On a carved stone found at Chapultepec. See Gama, *Descripcion cron. de dos Piedras*, page 100.

were attributed three heads, because, like the *Trimurti* of the Hindoos, he contained three persons, who formed only one divinity ; others bore the emblems of *Chia*, the wife of Bochica, Isis, or the Moon ; others were covered with masks resembling frogs, in allusion to the first sign of the year, *ata* ; finally others represented the monster *Fomagata*, the symbol of evil, figured with one eye, four ears, and a long tail. This *Fomagata*, whose name in the Chibcha language signifies *fire*, or *melted matter in a state of ebullition*, was considered as an evil spirit. He travelled through the air, between Tunja and Sogamozo, and transformed men into serpents, lizards, and tigers. According to other traditions *Fomagata* was originally a cruel prince, whom, to secure the succession to his brother Tusatua, Bochica caused to be treated on the night of his nuptials, as Uranus had been by Saturn. We are ignorant what constellation bears the name of this phantom ; but Mr. Duquesne thinks, that the Indians attach to it the confused remembrance of the appearance of a comet. When the procession, which reminds us of the *astrological processions* of the Chinese\*, and that of the feast of Isis, had reached the extremity of the *suna*, the victim was tied to the column we have already mentioned, a cloud of

\* Souciet, tom. iii, p. 33.



arrows covered him, and his heart was torn out, to be offered to the *King Sun*, Bochica. The blood of the *guesa* was received into sacred vases. This barbarous ceremony has several striking relations with that celebrated by the Mexicans at the end of their great cycle of fifty-two years, which is represented in the 15th plate\*.

The Muysca Indians engraved on stones the signs, which presided over the years, the moons, and lunar days. These stones, as we have already mentioned, reminded the priest *xequés*, in what *zocam*, or Muysca year, such or such a moon became intercalary. The stone of petrosilex, represented in orthographical projection, fig. 1; and in perspective, and of its real dimensions, fig. 2; seems to indicate the embolismic months of the first indiction of the cycle. It is pentagonal, because this indiction contains five ecclesiastical years of thirty-seven moons each; it exhibits nine signs, because five times thirty-seven moons are contained in nine Muysca years. To have a perfect comprehension of Mr. Duquesne's explanation of these signs, we should first recollect, that, by the employment of the periodical series in an indiction of nine years and five Muysca months, the intercalated months fall successively in *cuhupqua*, *muyhica*,

\* See vol. xiii, p. 225 and 381; Pl. xv, No. 8.

*ata*, *suhusa*, and *hisca* ; and that no intercalation can take place in the first, the third, the seventh, or the ninth year. These coincidences are rendered evident by the three concentric circles in the third figure. The first circle, which is the innermost, indicates the signs of the moons, or *sunas* ; the second circle, that in the middle, shows in what Muysca year of twenty *sunas* one of the signs contained in the series of ten terms becomes intercalary ; and finally the external circle determines the number of the intercalations, which have taken place in thirty-seven years. For instance, if it be asked in what *zocam* the sign *bosa* was intercalated, we find, that this intercalation was the sixth, or that it was made in the twelfth year of the cycle.

Mr. Duquesne, guided by the Indians, who have preserved some knowledge of the signs of the Muysca calendar, thinks, that he recognises on three faces of the stone the intercalations of *ata*, *suhusa*, and *hisca* ; that is to say those which take place in nine years of twelve and thirteen *sunas*, which correspond to the sixth, eighth, and tenth Muysca year of twenty *sunas*. I am ignorant why the first two intercalations, those of *cuhupqua* and *muyhica*, are not marked. The following is his interpretation, often somewhat arbitrary, of the 1st and 2d figures.

The frog without a head, *a*, denotes, that the indiction begins by the sign *ata*, the emblem of

water. In *b*, *c*, and *d*, are sculptured three small pieces of wood, each of which is marked by three transverse lines. That of the middle is not found in the same rank as the others, to denote, that it concerns only six Muysca years, after which the intercalation falls on *quihichata*, *e*, tadpole with a long tail, and without feet, *frog in repose*. This emblem announces, that the month over which the animal presides is *useless*, and does not reckon in the twelve sunas, which take place from one harvest to another. The two figures of a frog, *a* and *e*, are placed in a sort of quadrangular plate. We may have some doubt respecting the interpretation of the hieroglyphic *e*; but Mr. Duquesne asserts, that he has observed on several idols of jade the same astrological symbol of an intercalary moon. On these idols, the animal without feet was covered with the Indian tunic (*capisayo*), which is still worn among the lower class of people. It should be recollected, that, among the Aztecks, *the signs of the days* had also their altars\*. The figures *f* and *h* indicate by eight transverse lines, divided into five and three, that at the eighth Muysca year the moon governed by *suhuza* is intercalated. This sign is represented at *i* by a circle, traced, by means of a cord, around a column. The Indians assert, that *f*

\* See page 50.

and *h* represent serpents, which among all nations are the emblems of time. The under part of the stone exhibits at *g* the sign *hisca*, which alludes to the nuptials of Bochica and Chia\*, the sign of the lunar conjunction *figured* under the form of a *temple shut*. This is the end of the first revolution of the cycle. The sacrifice of the *guesa* is going to reopen the temple, and begin the second indiction. The intercalation of *hisca* is made after nine Muysca years, which is denoted by nine strokes at *b*, *c*, and *d*. The lock, which closes the temple, is the same as that made use of at present by the natives. It is pierced on both sides, to receive two pieces of cylindrical wood. On comparing this lock with that of the Egyptians, sculptured on the walls of Karnak, and in use for thousands of years on the banks of the Nile †. We observe the difference which exists between the works of a rude people, and those of an ingenious nation advanced in the arts.

Four of these pentagonal stones taught, as the Indians assert, the twenty intercalations of the *deaf moon*, which, according to the imperfect calendar of the Muyscas, took place in a cycle of seven hundred and forty *sunas*. This cycle contained *twenty years of the priests* of thirty-

\* Plate 44, fig. 4, No. 5.

† Denon, Voyage en Egypte, Plate 139, fig. 14.

seven moons each, or sixty rural years. It is known to all the nations, who live on the east of the Indus; and appears connected with the apparent movement of Jupiter in the ecliptic. We have already shown\*, that among the Hindoos the dedecatemorion of the solar zodiac drew its origin from the nacshatras, or from the lunar zodiac, each month taking the name of the lunar mansion, in which the full moon took place. In like manner we have observed, that the indications of twelve years, and the names of the nacshatras given to these years, relate to the heliacal rising of Jupiter. We may suppose, that at the remote period when the first astronomical ideas were developed, men were struck at seeing a planet proceed through the twenty-eight lunar mansions nearly in the same number of years, as they observed of lunar revolutions from one winter solstice to another. In order to collect these great years of twelve solar years in groups, one of the numbers, which among all nations are made use of as resting points in numeration, must necessarily be employed; namely 5, 10, or 20. The preference would probably be given to the smallest of these numbers; because  $5 \times 12$ , or 60, are contained six times in the number 360; which served for the division of the circle, on account of the 360 days, which the

\* See vol. xiii, p. 336.



most ancient nations of the East attributed to the year, represented under the emblem of a ring. Among the American nations, for instance among the Mexicans and the Muyscas, we find four indictions instead of five; and this singular preference for the number four is owing to the interest attached to the solstitial and equinoxial points, which denote the four seasons, or *great weeks* of the *great year*\*. Besides, the number of five intercalations led the Mexicans to groups of fifteen rural years, four of which form the Asiatic cycle of sixty years.

From the vague notions, which have reached us respecting the lunar signs borne in the procession of the *guesa*, and of the connexion which exists between the constellation of the frog, *ata*, and the sign of water, or the water rat, which, among the Chinese and the people of the Tartar race, opens the march of the asterisms, we may conjecture, that the ten hieroglyphics† of *ata*, *bosa*, *mica*, &c. originally marked, like the signs of the Mexican days‡, the division of a zodiac into ten parts. We find among the Chinese, and this fact is very important, a cycle of ten *cans*, to which the Mantchous give the names of ten colours§. It is probable, that anciently the *cans*

\* See vol. xiii, p. 373. † Plate 44, Fig. 4.

‡ See vol. xiii, p. 371.

§ Souciet and Gaubil, tom. 2, p. 135.

of the Muyscas had also particular names ; and we may suspect, that the cycles, which Mr. Duquesne has transmitted to us, alluded to these same names. All this leads us to presume, that the numerical words, *ata*, *bosa*, *mica*, &c., were substituted for the names of signs only to indicate the first sign of the zodiac, the second sign, the third sign, &c. ; and that this substitution has insensibly given rise to the extraordinary idea, that the numbers themselves were significative. This subject, which is not uninteresting in the history of the migrations of nations, can be cleared up only when we shall have compared a greater number of American monuments with each other.

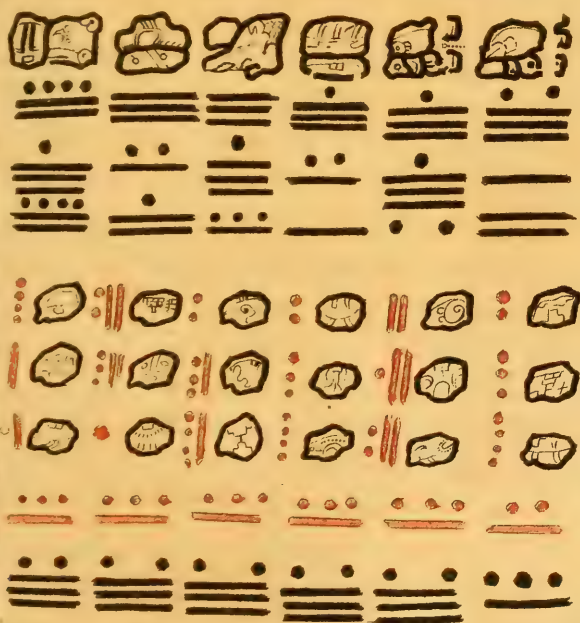
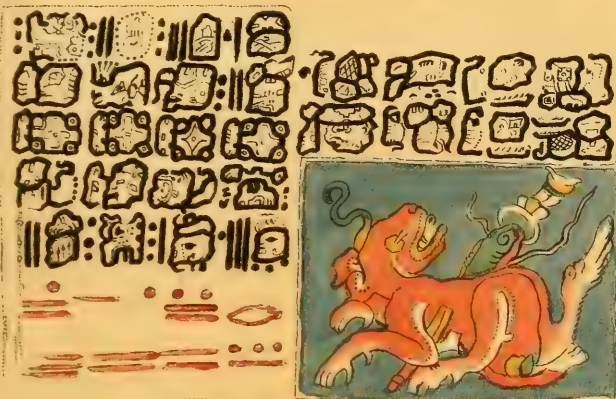
**FRAGMENT**  
 OF A  
*HIEROGLYPHICAL MANUSCRIPT*  
 PRESERVED IN THE ROYAL LIBRARY  
 AT  
**DRESDEN.**

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PLATE XLV.

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**A**CCORDING to the principle that monuments explain each other ; and that, to study profoundly the history of a nation, we should have under our eyes the whole of the works, to which it has affixed its character ; I have determined to engrave on plates 45, 46, 47, and 48, fragments taken from the Mexican manuscripts of Dresden and Vienna. The first of these manuscripts was altogether unknown to me, when the printing of these sheets was begun. It is not easy to give a complete notice of the hieroglyphical paintings, that have escaped the destruction, with



*Fragments of a hieroglyphical MS. at  
Dresden.*





which they were menaced, on the first discovery of America, by monkish fanaticism, and the stupid carelessness of the first conquerors\*. An antiquary who has made deep researches on the arts, the mythology, and the domestic life of the Greeks and Romans, Mr. Boettiger, gave me information of the *Codex Mexicanus* in the royal library at Dresden. He has spoken of it lately in a work, which displays the most extensive ideas concerning the paintings of the barbarous nations, as well as those of the Hindoos, the Persians, the Chinese, the Egyptians, and the Greeks†. I am indebted to the friendship of this distinguished gentleman, and to the kindness of Count Marcolini, for the copy of the fragment contained in the 45th plate.

This Azteck manuscript, as Mr. Boettiger assured me, was purchased at Vienna, by the librarian, Goetze‡, in his Literary Journey to Italy, in 1739. It is on paper made of *metl* (agave mexicana), like those I brought from New Spain; and forms a *tabella plicatilis*, nearly six metres in length, containing forty leaves, covered with paintings on both sides. Each page is 0·295 met. (seven inches three lines)

\* Vol. xiii, p. 178.

† Boettiger, Ideen zur Archæologie der Malerei, tom. i, p. 17—21.

‡ Goetze, Denkwuerdigkeiten der Dresdner Bibliothek, erste Sammlung, 1744, p. 4.

long, and 0·085 met. (three inches, two lines, French measure) wide. This form, analogous to that of the ancient *Dipticks*, distinguishes the manuscript at Dresden from those at Vienna, Veletri, and in the Vatican; but what renders it very remarkable is the disposition of the simple hieroglyphics, many of which are arranged in lines, as in a real symbolic writing. On comparing the 45th plate with the 13th and the 27th, we see, that the Codex Mexicanus of Dresden resembles none of those rituals in which the image of the astrological sign, that governs the half lunation, or small period of thirteen days, is surrounded by asterisms of lunar days. Here a great number of simple hieroglyphics follow each other without connexion, as in the Egyptian hieroglyphics, and the keys of the Chinese.

In general, nothing appears to me more characteristic of the works of the Chinese, than the uncouth paintings of sacred animals recumbent and pierced with darts, which we see at the bottom of the first three pages. This analogy extends to the linear signs, which remind us of the *kouas*, substituted by the Emperor Tai-hao-fo-hi, 2941 years before our era\*, for the *quippus*, which we find on the inscription of Rosetta, in the interior of Africa, in Tartary, Canada,

\* Julius Klaproth, Asiatisches Magazin, 1802, B. 1, p. 91, 521, and 545.

Mexico, and Peru. The *kouas*, and especially the *ho-tous*, are perhaps only a linear imitation\* of the *quippus*; for the first of the eight tri-grammata contains also unbroken lines, like the hieroglyphics of the Dresden manuscript. We shall not decide, whether these, in which points are often intermixed with parallel lines, express numeric quantities, a list of tributes for instance; or whether they be real cursive characters.

\* Palin de l'Etude des Hieroglyphes, 1812, tom. i, page 38, 107, 114, 120; tom. v, page 19, 31, and 112: Souciet and Gaubil, Observ. Astron. tom. ii, page 88 and 187; tom. iii, page 4, fig. 7.

# HIEROGLYPHIC PAINTINGS

TAKEN FROM THE

*MEXICAN MANUSCRIPT,*

PRESERVED IN THE

IMPERIAL LIBRARY AT VIENNA,

Nos. 1, 2, and 3.

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PLATES XLVI, XLVII, & XLVIII.

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OF all the Mexican manuscripts, which exist in the different libraries of Europe, that of Vienna is the oldest known. It is mentioned by Lambecius and Nessel\* in their catalogues; and Robertson has engraved the outlines of a fragment of it. I examined it during my last abode at Vienna in 1811, and am indebted for the coloured copy of the pages exhibited on these three plates to Mr. von Hammer, a distinguished naturalist, whose different works, and particu-

\* Nessel, Catal. Biblioth. Cæsareæ, tom. vi, p. 163. See above, vol. xiii. page 180.

larly his *Mines of the East*, have greatly contributed to facilitate the study of the analogies that exist between the nations of central Asia and those of America.

The Codex Mexicanus of the imperial library at Vienna is very remarkable, on account of its beautiful preservation, and the great vividness of the colours, which distinguish the allegorical figures. It resembles in its external form the manuscripts of the Vatican and Veletri, which are folded in the same manner. It has fifty-two pages; and each page is ten inches one line long, and eight inches two lines broad. The skin, on which these hieroglyphics are inscribed, is not a human skin, as has been falsely asserted: it is probable, that it is a skin of the *mazatl*, which naturalists call the Louisiana stag, and which is common in the north of Mexico. The pages shine, as if they had been varnished; but this is the effect of a white earthy coating fixed on the skin. A similar varnish is found on the Dresden manuscript, though this is not formed of a skin, but of *metl* paper. The Codex Mexicanus of Vienna contains more than a thousand human figures, disposed in the most varied manner, and not uniformly arranged, as they are found in the rituals of Veletri and the Vatican. Sometimes two figures are grouped together; but more frequently each figure is separate, and seems to be pointing at something



with the finger. The thirteenth page is very remarkable. Divided by three horizontal lines, it evidently indicates, that the Mexicans read from right to left, and from the bottom to the top, βουστροφηδον. Though the number of the pages is equal to the number of years contained in a Mexican cycle, I have not been able to discern any thing relative to the return of the four hieroglyphics, which distinguish the years, Almost on every leaf we see, independent of the solstitial and equinoctial signs, *rabbit*, *cane*, *flint*, and *house*, the asterisms of the Jaguar, *Ocelotl*; of the Ape *Ozomatli*; and of the Eagle with rich feathers, *Cozcaquauhtli*. These signs preside over the days, and not over the year. On examining the series of pages from thirteen to thirteen, we see nothing periodical; and, what is above all very striking, the dates, of which I have reckoned 373 in the first twenty-two pages of the manuscript, are arranged in such a manner as to have no relation to the order in which they follow each other in the Mexican calendar. We find *ome ehecatl* (1, wind) immediately before *matlactli calli* (10, house), and *ce miquixtli* (1, death's head) coupled with *chicome miquixtli* (7, death's head), though the days governed by these signs are very distant from each other. If this manuscript treat of astrological matters, as is very possible, we shall have reason to be astonished, that whole pages, for instance the first

and the twenty-second, offer no indication of dates; if there were, we should easily know them by the rounds, which express the different terms of the periodical series of thirteen ciphers.

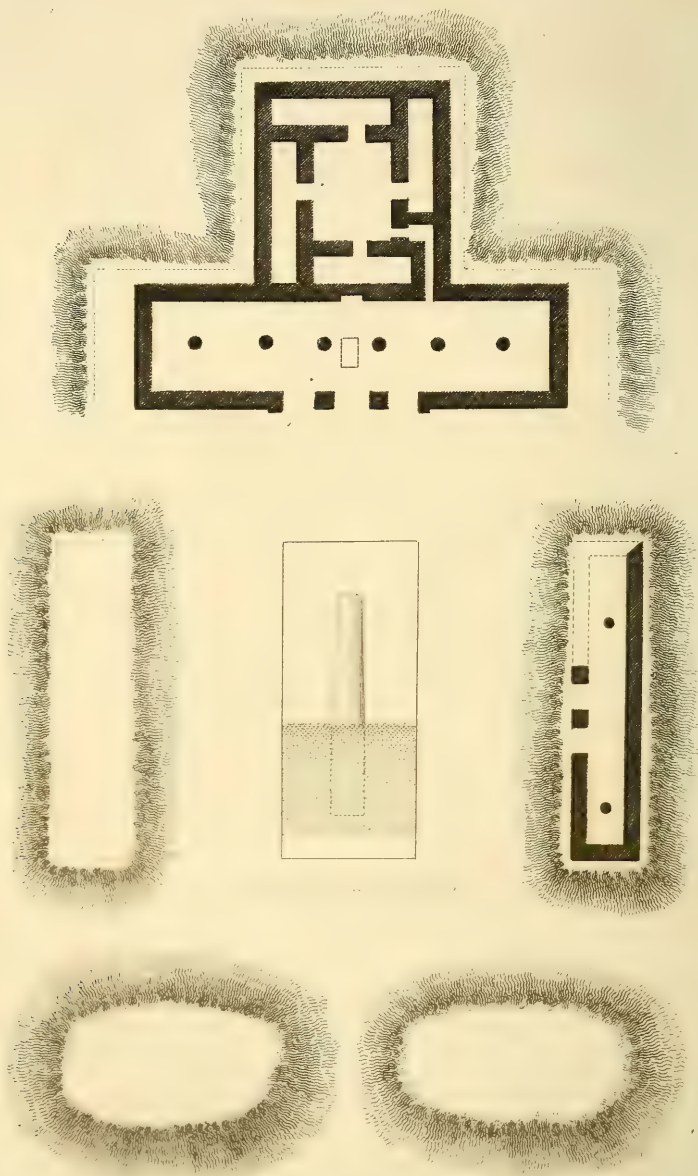
We find in Plate 46 a very singular symbolical figure representing a man, whose foot is wedged in the trunk of a tree, or in a rock; Plate 47, a woman spinning cotton; a man's head with a beard; shells; a large bird, perhaps an alcatraz, drinking water; a priest kindling the sacred fire by friction\*; a man with a bushy beard, carrying in his hand a kind of *vexillum*, &c. These same persons surrounded by ten other hieroglyphics are repeated on the 48th plate.

On casting our eyes over this shapeless writing of the Mexicans, it is self-evident, that the sciences would gain but little, if we should ever be enabled to decipher what a people, that had made so little progress in civilization, has recorded in these books. Notwithstanding the respect we owe the Egyptians, who have had so powerful an influence on the advancement of knowledge, we have little reason to presume, that the numerous inscriptions, traced on their obelisks, and the cornices of their temples, contain truths of much importance. These considerations however, though just, ought not, in my

\* See vol. xiii, page 225, and Plate 15, No. 8.

opinion, to lead us to neglect the study of the symbolic and sacred characters. The knowledge of these characters is intimately connected with the mythology, the manners, and the individual genius of nations ; it throws light on the history of the ancient migrations of our species ; and is highly interesting to the philosopher, presenting him, in the uniform progress of the language of signs in parts of the Earth the most remote from each other, an image of the first unfolding of the faculties of man.





*Plan of the Ruins of Ulla.*



# RUINS OF MIGUITLAN,

OR

## MITLA,

IN THE

### *PROVINCE OF OAXACA;*

PLAN AND ELEVATION.

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PLATES XLIX & L.

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**A**FTER having given in this work the description of so many barbarous monuments, which are interesting merely as they are connected with history, I feel some pleasure in bringing forward to notice a building constructed by the Tzapotecks, anciently inhabiting Oaxaca, and covered with ornaments remarkable for their elegance. This edifice is known in the country under the name of the Palace of Mitla. It stands on the south-east of the city of Oaxaca, or Guaxaca, at ten leagues distance, on the road to Tehuantepec, in a granitic country. Mitla is only a con-

traction of the word Miguitlan, which signifies, in the Mexican language, *place of desolation, place of wo.* This term appears to have been well chosen for a site so savage and lugubrious, that, according to the narrative of travellers, the warbling of birds is there scarcely ever heard. The TzapotECK Indians call these ruins *Leoba*, or *Luiva*, *burial*, alluding to the excavations found beneath the walls covered with arabesques. I have had occasion to speak of this monument in my Political Essay on the Kingdom of New Spain\*.

According to the traditions that have been preserved, the principal purpose of these buildings was to mark the spot where the ashes of the TzapotECK princes reposed. The sovereign, at the death of a son or a brother, withdrew into one of these habitations, which were erected over the tombs, to deliver himself up to grief and religious rites. Others assert, that a family of priests, charged with the expiatory sacrifices which were made for the repose of the dead, lived in this solitary abode.

The plan of the palace †, drawn by a very distinguished Mexican artist, Don Luis Martin, shows, that originally there existed at Mitla five

\* Vol. first, page 263.

† Plate 49.

separate buildings, disposed with great regularity. A very large gate (6), of which some vestiges are still seen, led to a spacious court, fifty metres square. Heaps of earth, and remains of subterraneous structures, indicate, that four small edifices of oblong form (8 and 9) surrounded the court. That on the right is in a state of tolerable preservation, and the remains of two columns still exist.

In the principal edifice we distinguish—

1. A terrace, raised one or two metres above the level of the court, and surrounding the walls, to which it serves at the same time as a basis, as we see more distinctly in the 50th plate.

2. A niche formed in the wall, a metre and half above the level of the *hall with pillars*. This niche, which is broader than it is high, enclosed no doubt an idol. The principal door of the hall is covered with a stone 4·3 met. long, 1·7 met. broad, and 0·8 met. high.

3 and 4. Entrance of the inner court.

5 and 6. Well, or opening of the tomb. A very broad staircase leads to an excavation in form of a cross, supported by columns. The two galleries, which intersect each other at right angles, are each twenty-seven metres long and eight broad. The walls are covered with *grecques* and arabesques.

7. Six columns, intended to support the

beams of savine wood, that formed the ceiling. Three of these beams are still in good preservation. The roof consisted of very large slabs. The columns, which indicate the infancy of the art, *and* are the only high ones hitherto found in America, are without capitals. Their shaft is of a single piece. Some persons, well versed in mineralogy, have told me, that the stone is a fine amphibolic porphyry; others have asserted, that it is a porphyritic granite. The total height of the columns is 5·8 m.; but they are buried in the ground to one third of their height. I have sketched one of these columns separately, on a larger scale.

10. The inner court.

11, 12, and 13. Three small apartments surrounding the court, and not communicating with a fourth, which is behind the niche. The different parts of this edifice present very striking inequalities, or want of symmetry. In the interior of the apartments there are paintings, representing weapons, trophies, and sacrifices. There is no appearance of their ever having had windows.

Don Luis Martin and Colonel de la Laguna have sketched with great exactness the drawings à la Grecque, the labyrinths, and meanders, with which the exterior of the walls of the palace of Mitla is covered. These drawings, which de-

serve to be engraved entire, are in the hands of the Marquis of Branciforte, one of the last viceroys of New Spain. I had the pleasure of making several geological excursions with Mr. Martin in the environs of Mexico. He communicated to me the drawing given in the fiftieth plate, which represents three fragments of the walls; and shows, that the ornaments succeeding each other are never similar. These arabesques \* form a kind of mosaic composed of several square stones, which are placed with much address by the side of each other. The mosaic is applied on a mass of clay, which appears to fill up the inside of the walls, as is also observed in some Peruvian edifices. The length of these walls on the same line at Mitla is only about forty metres; their height probably never exceeded five or six metres. This edifice, though small, might however produce some effect from the arrangement of its parts, and the elegant form of its ornaments. Several temples of Egypt, near Syene, Philæ, Elethya, and Latopolis, or Esnè †, have still less considerable dimensions.

\* Compare plate 39, page 90.

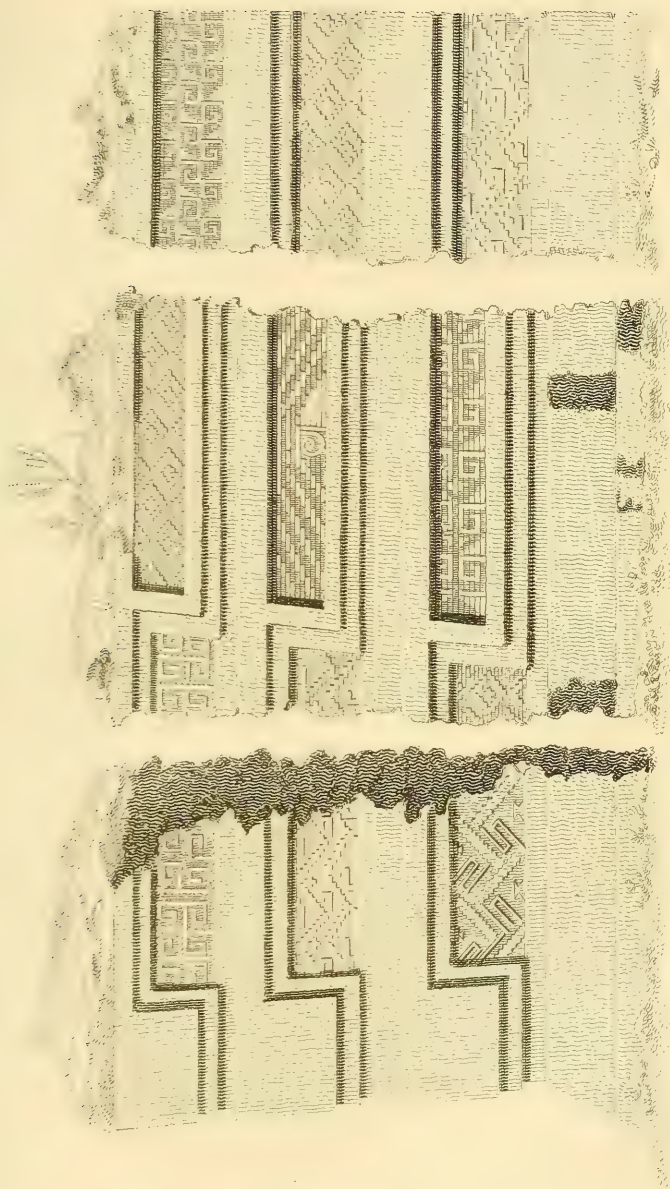
† Description of Egypt, ancient monuments, Vol. 1, plate 38, fig. 5 and 6; plate 71, fig. 1 and 2; plate 73, and plate 85.



In the environs of Mitla are the remains of a great pyramid, and some other buildings very much resembling those which we have just described. More to the south, near Guatimala, in a plain called El Palenque, the ruins of a whole town are evidences of the taste of the Tolteck and Azteck race for the ornaments of architecture. We are absolutely ignorant of the antiquity of these edifices, but it is scarcely probable, that it goes back farther than the thirteenth or fourteenth century of our era.

The Greek ornaments of the palace of Mitla offer, no doubt, a striking analogy with those of the vases of lower Italy, and with others which we find spread over the surface of almost the whole of the old continent : but I have already observed in another place, that analogies of this kind are very limited proofs of the ancient communications of nations ; and that, under every zone, men are pleased with a *rhythmic repetition* of the same forms, a repetition which constitutes the principal character of what we vaguely call *grecques*, meanders, and arabesques. Still more, the perfection of these ornaments is no indication of any great progress in civilization among the people where they are in use. Mr. Krusenstern \* gives a de-

\* Krusenstern, Reise um die Welt, Petersburg, 1810, tom. i, page 168, Atlas, Tafel 8, 10, and 16.



*Ruins of Moha.*

Pub<sup>d</sup> by Longman, West, Rees Orme & Brown Aug<sup>r</sup> 1814.



scription of arabesques of great elegance fixed by means of tatooing on the skins of the most ferocious inhabitants of Washington's islands.

VIEW  
OF  
CORAZON.

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PLATE LI.

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THE mountain of Corazon, covered with perpetual snow, derived its name from the form of its summit, which is nearly that of a heart. I have sketched it, as it appears from the Alto de Poingasi, near the city of Quito. This *Nevado* is found in the western Cordillera, between the summits of Pichincha and Ilinissa. One of the pyramids of the mountain last mentioned is seen on the left, above the eastern slope of Corazon. The apparent proximity of these two summits, and the contrast of their forms, present a very singular point of view.

It was on the summit of Corazon, that, before our voyage to America, the greatest depression of the mercury in the barometer had been observed. “ M. Bouguer and myself,” says M.



de la Condamine in his Historical Introduction\*  
 “ began our journey in very fine weather. The  
 persons whom we had left in our tents soon lost  
 sight of us among the clouds, which appeared  
 to us only a mist, from the time we entered them.  
 A cold and piercing wind covered us in a short  
 time with icicles. In several places we were  
 forced to scale the rock, by climbing with our  
 hands and feet. At length we reached the sum-  
 mit; and on looking at each other, we perceived  
 all one side of our clothes, one of our eyebrows,  
 and half our beards, stuck full of small frozen  
 points, exhibiting a singular spectacle. The  
 mercury stood only at fifteen inches ten lines.  
 No one had hitherto seen the barometer so low  
 in the open air, and probably no one had as-  
 cended to a greater height: we were 2470 toises  
 above the level of the sea, and we can answer  
 within four or five toises for the exactness of this  
 calculation.

As we are at present acquainted with the  
 influence of the temperature and the decrement  
 of caloric on calculations made by means of the  
 barometer, we may be permitted to doubt of the  
 exactness of a measurement, in which the error is  
 presumed not to amount to  $\frac{1}{490}$  of the total  
 height, though the calculation was made by the

\* Voyage to the Equator, page 83. This excursion took  
 place in July, 1738.

simple subtraction of logarithms. M. de la Condamine had no instruments with him, when he visited the crater of Rucu-Pichincha. If this celebrated astronomer then attained an elevation equal to that of a rock, of which I shall speak in another place, and on which I had nearly perished with the Indian Philip Aldas, on the 16th of May, 1802, he found himself, without knowing it, at a greater height \* than when he was on the top of Corazon. The absolute height of this rock, according to the formula of Mr. Laplace, is 4858 metres (2490 toises) : and consequently exceeds near forty metres the elevation of the point, measured in 1738 by the French academicians. Besides, the calculation of these philosophers are all affected by the uncertainty that prevails respecting the height of the signal on Caraburn, to which Bouguer assigns 2366 metres (1214 toises), and Ulloa 2470 metres (1268 toises.)

\* See my Collection of Astronomical Observations, vol. 1, p. 338.

## COSTUMES

OF THE

## INDIANS OF MECHOACAN.

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 PLATES LII, & LIII.
 

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THE Indians of the province of Valladolid, the ancient kingdom of Mechoacan, are the most industrious of New Spain. They have a remarkable talent of cutting out small figures in wood, and dressing them in clothes made of the pith of an aquatic plant. This pith, which is very porous, imbibes the most vivid colours; and, if cut spirally, yields pieces of considerable dimensions. I brought home for her majesty the *queen of Prussia*, a collection of these Indian figures, arranged with much skill. This princess, who united to a great elevation of character an enlightened taste for the arts, ordered such as had suffered the least from carriage to be sketched. These drawings are exhibited in

plates 52 and 53. If we examine them, we must be struck with the strange mixture of the old Indian costume with that introduced by the Spanish colonists.

**VIEW**  
**OF THE**  
***INTERIOR OF THE CRATER OF THE***  
***PEAK OF TENERIFFE.***

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PLATE LIV.

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As the views of the Cordilleras form, at the same time, the picturesque Atlas of the narrative of the journey to the tropics, I have added this plate, though it has no relation to the new continent. It represents the summit of the Piton, or Sugarloaf, which contains the *Caldera* of the Peak of Teneriffe. We perceive the rapid declivity of the cone covered with volcanic ashes ; a circular wall of lava surrounding the crater, which is no other than a solfatara ; and a large breach in the wall on the western side. I had sketched this drawing in a mere geological point of view ; the lithoid lavas, preyed on by the constant action of the vapours of sulphuric acid,



are placed in strata on each other, like the layers of the mountains of secondary formation.

These strata, similar to those observed on the brink of the ancient crater of Vesuvius at the Somma, appear to be the result of successive overflowings. They are formed of vitrified lava, of a porphyry with base of <sup>le</sup>osidian, and of pitchstone. For ages past, the peak of Teneriffe, the perpendicular height of which is more than nineteen hundred toises, has acted only by lateral eruptions. The last of these eruptions is that of Chahorra, which took place in 1798. On beholding in the plain of Retama the enormous quantity of substances thrown out by the peak, we are astonished at the smallness of the crater, from which we suppose that so much ashes, pumice stone, and blocks of volcanic vitrified matter, have issued ; but Mr. Cordier, who has made the longest residence of any mineralogist in the island of Teneriffe, has furnished the important observation, that the present crater, the caldera of the piton, is not the principal opening of the volcano. This learned traveller found on the northern declivity of the peak a funnel of enormous dimensions, which appears to have acted the principal part in the ancient eruptions of the volcano of Teneriffe.

# SUPPLEMENT.

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## FRAGMENTS

OF

## *HIEROGLYPHIC PAINTINGS,*

TAKEN FROM THE

CODEX TELLERIANO-REMENSIS.

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PLATES LV. & LVI.

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THE library of Paris possesses no original Mexican manuscripts, but it contains a valuable volume, in which a Spaniard, an inhabitant of New Spain, copied, either toward the end of the sixteenth century or the beginning of the seventeenth, a great number of hieroglyphic paintings. These copies are in general very carefully made, and bear the character of original drawings, as we may judge by the symbolic figures repeated in the manuscripts of Vienna, Veletri, and Rome.

This volume\*, which is very little known, and from which we have taken the fragments represented in plates 55 and 56, belonged formerly to le Tellier, archbishop of Rheims; but we know not by what means it came into his hands. In its outward form it resembles the manuscript preserved in the library of the Vatican, No. 3738. Each hieroglyphic figure is accompanied by several explanations, written, as it appears, at different times, in Mexican as well as in Spanish. It is probable that these notes, which throw great light on the history, the chronology, and the religious rites of the Aztecks, were composed by a Spanish monk at Mexico, from the dictation of some of the natives. They are more instructive than those we find in the *Raccolta di Mendoza*, and the Mexican names are much more correctly written.

The *Codex Mex. Tellerianus* contains a copy of three different works; the first of which is a ritual almanac; the second, a book of astrology; and the third, a Mexican history from the year 5 *tochtli*, or 1197, to the year 4 *calli*, or 1561. We shall give a succinct idea of these three manuscripts.

\* Manuscript of 96 pages in folio, under the title of *Geoglyphicos de que usavan los Mexicanos*. (Cod. Teller. Remens. 14, Reg. 613.)

1. *Ritual*, in which we find the images of twelve Tolteck and Azteck divinities; and the principal festivals which have given their names to the eighteen months of the year; for instance, the festival of *Tecuilhuitontl*, or *of all lords*; of *Micayllhuitl*, or *of all the dead*; of *Quecholi*, &c. The hieroglyphic of the five complementary days\* terminates the series of the festivals. The proprietor of the manuscript has followed in his notes the erroneous system, according to which the Mexican year is supposed to begin eighteen days before the spring equinox.

2. *Astrological part*. Here we find the indication of the days that are to be considered as indifferent, lucky, or unlucky. Among the last are eleven, which the Mexicans believed to be very dangerous to domestic tranquillity. Husbands were afraid of wives born on these days; and we may suppose, that the latter were very careful in concealing either the astrological almanac, or the day of their birth. Infidelity, considered as the effect of blind destiny, was not the less severely punished by the laws. A rope was put around the neck of the adulterous woman: and she was dragged into a public square, where she was stoned to death in the presence of the husband. This punishment is

\* Plate 55, fig. 1.

represented in the ninth sheet\* of the manuscript.

3. *Annals of the Mexican Empire.* These include three hundred and sixty-four years. This part of the work, with which Boturini, Clavigero, and Gama, were unacquainted, and which seems to be of the greatest authenticity, deserves to be consulted by those who would wish to undertake a classical history of the Mexican nations. From the year 1197, as far as to the middle of the fifteenth century, these annals relate but a very small number of facts, scarcely one or two in an interval of thirteen years; from 1454 the narrative becomes more circumstantial; and from 1472 to 1549 we find at large, and almost year by year, an account of whatever was remarkable in the physical and political state of the country. The pages containing the periods from 1274 to 1385, from 1496 to 1502, and from 1518 to 1529, are wanting. In this last interval, the entrance of the Spaniards into Mexico took place. The figures are misshapen, but often of great simplicity. We shall cite, among the objects worthy of attention, the image of the king Huitzilihuitl, who, having no legitimate children by his wife, took a paintress†

\* Plate 55, fig. 2.

† Plate 55, fig. 3.



for his mistress, and who died\* in the year 13 *tochtli*, or 1414; the falls of snow † which took place in 1447 and 1503, and which caused a great mortality among the natives, by destroying the corn that had been sown; the earthquakes of 1460 ‡, 1462, 1468, 1480, 1495, 1507, 1533, and 1542; the eclipses of the Sun § in 1476, 1496, 1507, 1510, 1531; the first human sacrifice ||; the appearance of two comets in 1490 ¶ and 1529; the arrival\*\* and the death †† of the first bishop of Mexico, Fray Juan Zumaraga, in 1532 and 1549; the departure of Nunez de Guzman ‡‡ for the conquest of Xalisco; the death of the celebrated Pedro Alvarado, called by the natives Tonatiuh, the *Sun*, on account of his flaxen hair §§; the baptism of an Indian by a monk ||||; an epidemic malady, which depopulated ¶¶ Mexico under the viceroy Mendoza, in 1544 and 1545; the insurrection and punishment\*\*\* of the negroes of Mexico in 1537; a tempest which devastated the forests †††; the

\* Plate 55, fig. 4.

† Plate 55, fig. 5 and 6.

‡ Pl. 55, fig. 7, et Pl. 56, fig. 2.

§ Pl. 56, fig. 7.

|| See vol. xiii, p. 217.

¶ Pl. 55, fig. 8.

\*\* Pl. 56, fig. 1.

†† Pl. 56, fig. 6.

‡‡ Pl. 55, fig. 9.

§§ Pl. 56, fig. 4.

|||| Idem, idem.

¶¶ Pl. 56, fig. 5.

\*\*\* Pl. 56, fig. 2.

††† Pl. 56, fig. 5.

ravages made by the small pox \* among the Indians in 1538, &c.

If the annals of the Le Tellier manuscript accord with the chronology adopted by the abbé Clavigero in a dissertation, contained in the fourth volume of the ancient history of Mexico†; the correspondence of the Azteck and Christian years differs so much the more from that followed by Boturini and Acosta. These annals begin at the year 5 *tochtli*, or 1197, the period of the arrival of the Mexicans at Tula, which is the northern limit of the valley of Tenochtitlan. The great comet, the appearance of which is indicated near the hieroglyphic of the year 11 *tochtli*, or 1490, is that which was considered as the presage of the arrival of the Spaniards in America. Montezuma, discontented with the court astrologer, put him to death on this occasion‡. The sinister presages continued till 1509, when there was seen, according to the Le Tellier manuscript, during forty nights, a vivid light toward the east. This light, which seemed to arise from the Earth, was perhaps the zodiacal light, the splendor of which is very great and unequal under the tropics. The people consider the most common phenomena as new, when superstition gives them a mysterious meaning.

The comets of 1490 and 1529 are either

\* Plate 56, fig. 3.

† Storia Antica, vol. 4, p. 51.

‡ Clavigero, vol. 1, p. 288.

comets which appeared near the south pole, or those which P. Pingré \* indicates as having been seen alike in Europe and China. It is remarkable, that the hieroglyphic, which denotes an eclipse of the Sun †, is composed of the disks of the Moon and the Sun, one of which projects itself on the other. This symbol is a proof of the exactitude of the notions respecting the causes of eclipses ; it reminds us of the allegorical dance of the Mexican priests, which represents the Moon devouring the Sun. The eclipses of the latter luminary, corresponding to the years *Matlactli Tecpatl*, *Nahui Tecpatl*, and *Ome Acatl*, are those of the 26th of February, 1476 ; the 8th of August, 1496 ; the 13th of January, 1507 ; and the 8th of May, 1510 : which served as so many fixed points for the Mexican chronology. *The Art of verifying Dates* makes no mention of any eclipse of the Sun in the course of 1531 ; while our annals indicate one for *Matlactli Ome Acatl*, which corresponds to this year of our era. The eclipse of 1476 enabled the Mexican historians to fix the period of the victory, which the king Axajacatl gained over the Matlatzincks ; and it is that, on which Mr. Gama made so great a number of calculations ‡.

\* *Cometographie*, vol. 1, p. 478 and 486.

† Pl. 56, fig. 7. See vol. xiii, p. 401.

‡ Gama, *Descripcion de los Piedras*, p. 85—89 ; Torquemada, vol. 1, lib. ii, cap. 59 : Boturini, § 8, No. 13.

I am ignorant of the phenomenon\*, which in the commentary is often designated by these words: "This year the star threw out smoke." The volcano of Orizava bore the name of *Citlaltepētl mountain of the star*; and we may presume, that the annals of the empire contained the different epochas of the eruptions of this volcano. Nevertheless, at p. 86 of the Le Tellier manuscript, it is expressly said: "that the star which smoked, *la estrella que humeava*, was *Sitlal choloha*, which the Spaniards call Venus, and which was the object of a thousand fabulous tales." Now, I ask, what optical illusion could give Venus the appearance of a star throwing out smoke? Was it a kind of halo formed around the planet? As the volcano of Orizava is placed to the east of the city of Cholula, and its fiery crater resembles during the night a rising star, the volcano and the morning star may in symbolic language perhaps have been confounded with each other. The name which Venus still bears among the natives of the Azteck race is that of *Tlazolteotl*.

\* Plate 56, fig. 2.

**FRAGMENT**  
 OF A  
*CHRISTIAN CALENDAR,*  
 TAKEN FROM THE  
 AZTECK MANUSCRIPTS,  
 PRESERVED IN THE  
 ROYAL LIBRARY OF BERLIN.

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PLATE LVII.

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**T**HIS hieroglyphic calendar, made after the arrival of the Spaniards, is that of which we have spoken in the beginning of this work\*. The paper is of *metl*; the figures are merely sketched, and not coloured, as in the wrappers of some of the Egyptian mummies, and appear more like writing than painting. The days of festivals are indicated by rounds, which denote the units. The Holy Ghost is represented under the form

\* See vol. xiii, p. 191.



of the Mexican eagle, *cozcaquauhtli*. At the period when this calendar was composed, Christianity was confounded with the Mexican mythology. The missionaries not only tolerated, they even favoured to a certain point this mixture of ideas, symbols, and worships. They persuaded the natives, that the Gospel had already been preached in America at a very remote period ; they sought its traces in the Azteck rites with the same ardor, as in our days the learned, who addict themselves to the study of Sanscrit, feel in discussing the analogy of the Greek mythology with that of the banks of the Ganges, and of the Boorampooter\*.

\* Essai Politique sur la Nouvelle Espagne, vol. 1, p. 95.

## HIEROGLYPHIC PAINTINGS,

FROM THE

RACCOLTA DI MENDOZA.

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 PLATES LVIII & LIX.
 

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THESE engravings tend to throw some light on what we have already said of the rites and manners of the ancient Mexicans \*. We cannot give a clearer account of the interesting manuscript known under the name of the *Raccolta di Mendoza*, than by introducing here the explanation, which M. de Palin has given of it in his work on the study of hieroglyphics. We are far from admitting, without exception, all the parallels drawn by this ingenious writer; but we think it a beautiful and fertile idea, to consider all the nations of the Earth as belonging to the same family; and to recognise, in the

\* See vol. xiii, p. 183.

Chinese, Egyptian, Persian and American symbols, the type of a language of signs, which is common, we may say, to the whole race, and which is the natural offspring of the intellectual faculties of man.

“ The collection preserved by Purchas and Thevenot represents, in three parts, the foundation of the city, and its increase by the conquests of its princes ; its support by the tributes paid by the conquered cities ; its institutions, and the detail of the life of its inhabitants. The whole of this is obvious at the first view. We first distinguish the ten chiefs of the colony, that founded the empire, having the symbols of their names marked over their heads. They meet with the objects which form the arms of the city of Mexico. That stone surmounted by an Indian fig-tree, on which is an eagle\*, recalls to mind the eagle perched on a tree, and the cup, which the god Astrochiton gave as signs to distinguish the spot where Tyre† was to be built. A house, a habitation, denotes the new city‡ ; a buckler with arrows, its occupation by force §. The symbols near two other houses surrounded by combatants, teach us the names of the two cities first conquered. The remainder of the history is composed in the same spirit, and of similar

\* Pl. 58, fig. 1.

† Nonnus, XL, v. 4773.

‡ *Stone of Rosetta*, and Denon, Pl. CXXXIII.

§ Horapoll., II, 5, 12.

articles; every where we see weapons, the instruments of conquest, between the figures of the conquering princes and of the conquered cities, with the symbols of their names and of the years. The last were arranged near the representation of each event, in a sort of frame, which encircles the paintings, and which contains the hieroglyphics of a chronological cycle of fifty-two years.

“The accounts of the taxes form the second part of the collection of Mendoza, composed of the names of the tributary cities, and of the articles which each was bound to deliver in kind to the treasury and temples, denoted at the head of this list by the symbol of *calli*. These articles consist of all the useful productions of nature and of art: gold \*, silver, and precious stones: weapons, mats, cloaks, and blankets †; quadrupeds, birds, and feathers; cacao, maize, and vegetables; coloured paper, borax, salt, &c. These were represented either by figuring the thing containing for that contained in it; as vases ‡, baskets, bags, chests, and packages of a determinate size; or by delineating the form of the thing itself. The quantity is expressed by means of numerical signs, which denote the units by points and balls; the twenties § by a character

\* Pl. 58, Fig. 5.      † Pl. 58, Fig. 9.

‡ Pl. 58, Fig. 6.      § Pl. 58, Fig. 5.

which is found among the hieroglyphics; four hundred, or twenty times twenty, by an ear of corn\*, a pine-apple, or a quill, in which gold dust was kept; twenty times four hundred, or eight thousand, by a purse†, a value determined, as it appears, by the custom of enclosing so many thousand cacao nuts in a bag. This is the mode in which a sum of money was formerly designated in the Lower Empire, and is still in the Ottoman states.

“ This method and these denominations indicate the origin of the symbols of numbers in the Mexican book. We see how great an analogy this painting, which represents a state of primitive society, offers with the historical inscriptions in the ruins of Thebes, of which Tacitus speaks; and in which a long list of conquests was followed in the same manner by that of taxes paid in kind by the conquered nations‡. The laws, like the religious precepts of the mysteries, were exhibited within the temples, and on the chests of mummies; as those pictures of the mysteries of Eleusis, copied from those of Egypt, which tra-

\* Pl. 58, Fig. 10. † Pl. 58, Fig. 16.

‡ *Legebantur et indicta gentibus tributa pondus argenti, et auri, numerus armorum equorumque, et dona templis, ebur atque odores, quasque copias frumenti et omnium utensilium quæque natio pendeat.*



ced the history of human life from the cradle to the tomb \*.

“ Mexican laws form the third part of the manuscript we have under examination, which embraces the whole life of the citizens, placing before their eyes a picture of all the actions the law prescribes, and of which they see before hand the model. In the same manner as in the hieroglyphics on amulets the optative mode is to be understood, we have only to read the whole of this chapter in the imperative : let the mother instruct the infant in the cradle by words, represented by a tongue ; let the infant be put into the cradle from the first day of its birth, marked by a first flower, which is fastened to the cradle, and which is followed by three others ; after having devoted the infant to the gods†, let the midwife wash it on the fifth day in the court, amidst weapons or implements suitable to the occupations of its sex. This ceremony is performed before three children (denoting children in general), who name the new-born babe, and celebrate its birth by eating maize‡. In the inscription of Rosetta, the same thing is ordered by a decree,

\* Themistius, in Stobeus, *Serm.* 119, p. 104.

† With five prayers, to the two masters of Heaven and water, to all the gods, to the Moon, and to the Sun.

‡ Pl. 59, fig. 1.

and by a similar representation ; the three children called to celebrate the births, added to three flowers, forming the character of the celebration of the day of birth, which is represented also by the rising of the Sun\*. The whole of the details of this picture, or of this table of the Mexican laws, recalls to mind the baptism of the proselytes from Judaism in the presence of three witnesses; and the *αμφιδόμια* of the Greeks, in which the infant, on the fifth day from its birth, was devoted to the gods, and obtained a name, after expiatory ceremonies. The law ordains moreover in this first division, that parents should present the child in the cradle before the high priest, and the master that taught the use of weapons, and should consider its future destination : his education is prescribed by the paintings on the following tables, which exhibit the verbal instruction, and indicate the allowance of the half cake and whole cake, by the hermetic mark of seven †, which parents are allowed to give their children from three to four years old. The numbers of years are marked by circles, as in the hieroglyphics, and in the language of the Romans. At five years of age the boy carries loads, and the girl attends her mother spinning. At six, the girl spins herself, and is allowed like the boy a

\* Analyse de l'Insc. de Rosette, p. 145.

† Pl. 59, Fig. 2.

cake and half at a meal. At eight years of age, the instruments of punishment are shown to disobedient and idle children, and they are threatened; but it is not till they have attained ten years of age, that they are actually punished\*. At thirteen and fourteen the children of both sexes share the labors of their parents; they row, fish, cook, or weave†. At fifteen, the father presents two sons to two different masters of the temple and military college; this is the age of choosing their way of life: the girls are settled by marrying. From this period the years are no longer reckoned; we see the young man follow and serve the priests and the warriors, receiving instructions and undergoing chastisements in this double career. He obtains the honors attached to employments; blazoned bucklers, which are the marks of noble actions; the red riband, with which the head of the initiated knight is encircled; and the other distinctions, which the sovereign grants to valour, according to the number of the prisoners made. These different ranks are designated from the private soldier to the principal chiefs and generals of the army, and even the rebellious and punished cacique. The history of this cacique brings on the stage messengers of state, spies, officers of justice, judges, the great tribunals of the empire, and finally the sovereign himself, seated on his throne.

\* Pl. 59, fig. 3 and 4.      † Pl. 58, fig. 12.

“ These pictures are followed by representations of several trades, which obtain regulations ; and of several crimes, with their punishments. The whole is terminated by the man and woman at the age of threescore years and ten, enjoying on the brink of the tomb, in the midst of their posterity, the royal Persian privilege of intoxication, and of escaping from the law to forget their sufferings\*. The circle which denotes the year is repeated in this place, but divided by a double Greek cross, and surmounted by the numerical sign of twenty, to mark each score. Among the characters in this part of the work we must cite that of the nocturnal sky, observed by an astronomical priest†. This section of the circle, covered with small rounds with eyes, reminds us of the Egyptian hieroglyphic of the sky, and its images covered with eyes ‡.”

We shall insert in this place the notes, which are added to the collection of Mendoza, from the Mexican text, in the two editions of Purchas § and Thevenot ||.

\* Pl. 59, fig. 7. † Plate 58, fig. 1.

‡ Palin on the Study of Hieroglyphics, vol. 1, p. 88—97. The text of the original being disfigured by typographical errors, slight changes have been made, without which several phrases would have been unintelligible.

§ *Pilgrim, in five books*, vol. III, p. 1068, 1071, 1085, 1087, 1089, 1091, and 1097.

|| *Relation de divers Voyages curieux, par Melchisedec Thévenot*, t. 2, p. 47.

Pl. LVIII, Fig. 1. The ten founders of Tenochtitlan: *a*, Acacitli; *b*, Quapan; *c*, Ocelopan; *d*, Aguexotl; *e*, Tecineuh; *f*, Tenuch; *g*, Xominitl; *h*, Xocoyol; *i*, Xiuhcaqui; *k*, Acotl. The city of Tenochtitlan, or Mexico, is denoted by the weapons employed in conquering the territory on which it was built: we see above these weapons the *tuna*, or Indian fig tree, *m*, fixed on a rock; and the eagle, *n*, perched on the fig tree. (An ancient prophecy foretold, that the migrations of the Aztecks should not terminate, till the chiefs of the nation met with an eagle perched on a cactus. The place where this prodigy took place was to be the site of their new city.) The lines *t*, which form a cross, indicate either the dykes, or the canals, which traversed the marshy country inhabited by the founders of Tenochtitlan.

Fig. 2. *a*, ten years of the reign of Chimalpupuca, *b*; a buckler, *c*, and darts to denote the conquest of Tequixquiac, *d*, and of Chalco, *e*. Death of Chimalpupuca, *f*. Insurrection of the inhabitants of Chalco. *g*. They destroy four of the enemy's boats, *h*; and kill



five Mexicans, *i*. (We may be surprised, that the remembrance of so trivial a circumstance should have been preserved for ages.)

Fig. 3. Tribute of eight hundred tigers skins.

Fig. 4. Tribute of twenty tigers skins.

Fig. 5. Tribute of ingots of gold and gold dust.

Fig. 6. Tribute of four hundred pots of honey drawn from the maguey, *agave americana*.

Fig. 7. Soldiers of the order of priests.

Fig. 8. One of the chief priests, *a*, goes in the night, *d*, to the mountain to do penance; he carries fire, and a purse filled with perfume of copal; he is followed by a novice, *b*. Another priest, *c*, plays during the night on an instrument of music, called *téponatzli*. A third priest, *f*, notes the hour by observation of the stars, *e*.

Fig. 9. Tribute of stuffs for clothing. Each bale (*a*, *b*, *c*, *d*, and *e*,) contains four hundred pieces, indicated by the cipher inscribed on it.

Fig. 10 and 11. The same.

Fig. 12. A mother, *n*, instructing her daughter, *o*, to weave, *q*.

Fig. 13. A goldsmith instructing his son.

Fig. 14. Tribute : ten times four hundred, or four thousand mats, and as many seats of rushes.

Fig. 15. Tribute : four hundred sea shells from the coast of Colima.

Fig. 16. Tribute : eight thousand bales of copal.

Plate LIX. Fig. 1. " The figure, *a*, is a woman just delivered. Her child is placed in the cradle, *c* ; and four days after, marked by the four rounds, *b*, the midwife, *d*, carried the infant into the court of the house of the woman delivered, and placed it on rushes, called *tule*, *i*, spread on the ground ; three young boys, *f*, *g*, *h*, seated near these rushes, ate *ixicue* or toasted maize mixed with boiled beans, represented in the figure before them in a vase. The midwife, having washed the child, tells the boys to pronounce aloud the name it is to bear. When the infant was carried to be washed, if it were a boy, they put into his hands the tools, *e*, appropriate to his father's trade ; a shield and darts, for instance, if the father were a soldier : and if the infant were a girl, a spindle or distaff, *l*, a basket, *m*, a broom, *k*. When this ceremony of baptism and ablution was finished, the midwife restored the child to its mother. If the boy were the

son of a soldier, the shield and darts were buried near the place where probably he might at a future day engage the enemy; with respect to the implements belonging to girls, they were buried under a *metate*, or stone on which the cakes of maize were kneaded. When the father, *q*, and the mother, *r*, of the child, *o*, were disposed to devote him to the ecclesiastical state, they brought him to the temple on the twentieth day after the ablution. On presenting him at the altar, they added offerings of rich stuffs and eatables. When the child was old enough, they put him into the hands of the high priest, *n*, to instruct him with respect to the order of the sacrifices. If the parents wished their child to be a soldier, he was offered to the *teachauch*, *p*, whose office was to instruct youth in the art of war."

**Fig. 2.** " Allowance, or food granted to children at each meal : the father, *a*, gives precepts to his son, *c*, three years old, marked by three rounds, *b*. The boy of this age had at each meal half a cake of maize, *d*. The mother, *e*, gives precepts to her daughter at three years of age, *g* ; the daughter had

also the allowance of half a cake, *f*."

Fig. 3 and 4. Punishments of children. They are pricked with leaves of maguey, or exposed to the smoke of pimento.

Fig. 5. The adulterous woman and her paramour bound together to be stoned. See Le Tellier's Manuscript in the Library at Paris, Pl. iv, fig. 2.

Fig. 6. "The father, *a*, puts one of his sons, *b*, fifteen years old, into the hands of the *tlamacazqui*, *c*, or high priest of the temple Calmacac, *d*, to instruct him, and make him a priest. Another son, *e*, of the same age, *h*, is sent by his father to school, *g*, to be taught by the master who is set over the children.

"When a girl married, the *aman-teza*, or matchmaker, *i*, carried her, towards evening, on his back, *w*, to the youth destined to become her husband. He was lighted by four women, *x*, *z*, each bearing in her hand a kind of torch of pine wood, marked by the ciphers 1, 2, 3, and 4. The parents of the youth came out to receive the girl at the entrance of the court of the house, and introduced her into a room, where the youth waited for her; they placed themselves on seats arranged on a mat, *o*; and the whole

ceremony of the marriage consisted in tying one corner of the young man's garment, *l*, to a corner of that of the girl, *m*. They offered to their divinities, by way of sacrifice, the incense of copal, *q*, which they burned in a vase. Two old men, *i*, *r*, and two old women, *n*, *v*, served as witnesses. The newly married couple afterward ate the provision set before them, and drank out of cups, *t*, *pulque*, represented by the pot, *s*. The old men and women also ate; and, after the repast, each separately exhorted the young married persons to live happily together."

Fig. 7. "The law permits a man of seventy years of age, *f*, to intoxicate himself in public, or in private. His wife, *g*, has the same privilege, if she be a grandmother."



**FRAGMENTS**  
**OF**  
**AZTECK PAINTINGS,**

**TAKEN FROM A MANUSCRIPT PRESERVED IN THE**  
**LIBRARY OF THE VATICAN.**

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**PLATE LX.**

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**T**HESE symbolical figures are chosen from among those of the manuscript of which we have spoken in the preceding volume of this work, p. 201.

## VOLCANO OF PICHINCHA.

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### PLATE LXI.

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THIS view was taken at Chillo, the country house of the Marquis de Selvaegre, whose son accompanied us in our journey to Mexico, and the river of Amazons. The volcano is seen over the savannah of Cachapamba. In my sketch may be distinguished (1) Rucupichincha, or the summits covered with snow that surround the crater; the cone of Tablahuma (2); the Picacho de los Ladrillos (3); the rocky summit of Guaguapichincha (4), which is the *cacumen lapideum* of the French academicians; finally, the top, on which is placed the famous cross, that served as a signal in the measurement of the meridian (5). The absolute height of these summits is, according to my observations, from two thousand three hundred to two thousand five hundred toises: but as the plain of Chillo is itself one thousand three hundred and forty toises above the level of

the ocean, the view of the volcano of Pichincha is less majestic on the eastern, than on the western side, where the vast forests of the Esmeraldas begin. The distances, and several angles of altitude, which served for this sketch, were determined by means of a sextant of Ramsden's.

**PLAN**  
 OF A  
**FORTIFIED HOUSE OF THE INCA,**  
 SITUATE ON THE  
***CORDILLERA OF ASSUAY.***  
 RUINS OF A PART OF THE  
**ANCIENT PERUVIAN CITY OF CHULUCANAS.**

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PLATE LXII.

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1. THE plan of the fortified house of Cannar was taken by M. de la Condamine in 1739 ; his sketch, which is at Paris in the archives of the Bureau des Longitudes, has been rectified from the observations I made in 1803, and the plate is inserted in the Memoirs of the Academy of Berlin\*.

• Mem. de l'Académie de Berlin, 1746, p. 448—454.

- AB. A platform of earth raised five or six metres above the level of the soil.
- CD. A square building, of which we have given the sketch in Plate 20th. In the western apartment are cylindrical stones, which jut out half a metre from the wall, at right angles, and seem to have been intended for the purpose of hanging weapons on.
- LF. A terrace which supports the platform AB, and rests on a second terrace GH, two metres broad, and five metres in height. The platform AB has the form of an oblong oval, the greater axis of which makes, with the magnetic meridian, the angle N.  $6^{\circ}$  W., assuming the variation of the needle to be  $8^{\circ}$  north-east.
- SK and LM. Two sloping paths leading to the esplanade to the south and north of the fortress, the first ending at the middle, the second at about a quarter of the length of the platform. At the end of the northern path, M, begins the inferior terrace GH.
- NO. A wall reaching from one gable end to the other, and separating the square building into two apartments.
- P and Q. The two doors opposite the two semi-circular extremities, AD, which terminate the platforms.



R S. A terrace cased with stones, four metres below the oval platform. This terrace commences at the eastern extremity of the platform ; it is at first saliant, R, a few feet to the north, as if to bar and terminate the *fausse-braie*, GH ; thence it turns off at a right angle toward the west, and stretches the length of twenty-eight metres, forming a curtain, the western extremity of which is supported by a kind of square bastion TV, composed of two flanks and a front. Beyond this bastion are the vestiges of a wall, without any appearance of fortification. This wall followed the direction of the most elevated part of the ground, which gradually flattens ; returned to the east by the south, making a half circle, TV ; and afterward became again parallel to the length of the platform. The part VX of the wall is in good preservation.

XYZWL. An irregular enclosure, divided into four courts ; the first, of which some vestiges remain on the eastern side at *w* and  $\Delta\Gamma$ , is an oblong square of eighty feet by a hundred and ten. It appears to have been surrounded by small separate dwellings not so broad as they were long, of which the foundations are still distinguishable in some places.

$\Gamma z \mu \Delta$ . The second court, somewhat smaller than the first, and without the least vestige of any building.

$XYZ \mu s g$ . The third court, the largest of the whole, but very irregular. The walls of this part of the building are of modern construction; and it is possible, that the small square building, of which we see the ruins,  $\mu$ , were originally without the fortress.

$a, b, c, d, e, f$ . Six halls of the fourth court, contained in the irregular enclosure,  $RSTVX$ , to the south and west of the fortress.

$r$  and  $s$ . Vestiges of two gates pierced in a wall, which was parallel to the wall,  $g, i, h$ .

$g h$ . A narrow gallery, which led to the bastion,  $ST$ ; it is near the inner railing,  $ZK$ , which leads to the platform of the fortress on the south side.

$k$  and  $l$ . Doors of the two edifices,  $d$  and  $e$ .

$n$  and  $o$ . Door open to the east and the north, leading into the small edifices,  $e, f$ . These edifices, intended as lodgings for the guard of the Inca, appear to have been built with much less care than the preceding, and without the aid of the square. M. de la Condamine supposes, that the prince and his wife dwelt in the buildings marked  $a$  and  $b$ . The gates,  $p, q, g$ , and  $h$ ,

are high enough for the passage of a man seated in a palanquin, and carried on the shoulders of the servants. The niches\* formed in the inner walls are indicated in the plan.

The principal view in this work being to present an exact idea of the state of the arts among the civilized nations of America, we have preferred giving a description of the ruins of the house of the Inca at Cannar as they appeared in 1739. Several walls have been thrown down since that period ; and I had great difficulty in finding the whole of the divisions, which are traced in the plan of M. de la Condamine.

II. The ruins of the ancient city of Chulucanas are very remarkable, on account of the extreme regularity of the streets and buildings. We find these ruins on the ridge of the Cordilleras, at fourteen hundred toises height, in the Paramo of Chulucanas, between the Indian villages of Ayavaca and Guancabamba. The high road of the Inca, one of the most useful and at the same time one of the most stupendous works ever executed by men, is still in good preservation between Chulucanas, Guamani, and Sagique. On the summit of the Andes, in excessively cold spots, which could have no attraction but for the inhabitants of Cuzco, the remains of great edi-

\* See vol. xiii, p. 243, and 259.

fices are every where seen. I counted nine between the Paramo of Chulucanas and the village of Guancabamba : they are called in the country by the sounding title of palaces of the Inca ; but it is probable, that the greater part were built to facilitate the military communications between Peru and the kingdom of Quito.

The city of Chulucanas appears to have been placed on the slope of a hill, on the brink of a small river, from which it was separated by a wall. Two openings made in this wall correspond with the two principal streets. The houses, built of porphyry, are distributed into eight quarters, formed by streets cutting each other at right angles. Each quarter contains twelve small habitations, so that there are ninety-six in that part of the city, of which we give the plan in the sixty-second plate. I prefer the word habitation to that of house, because the latter gives the idea of several apartments communicating together, and in the same enclosure ; while the habitations of Chulucanas, like those of Herculaneum, consist only of a single room, the door of which probably opened into an inner court. In the centre of the eight quarters, which we have just described, are the remains of four large buildings of an oblong form, and separated by four small square buildings, occupying the four corners. On the right of the river, which bounds the city, we discover some very uncouth

structures rising in the form of an amphitheatre. The hill is divided into six terraces, each platform of which is faced with hewn stone. Farther on we find the baths of the Inca, of which I shall give a more ample description in the Historical Narrative of my Travels. We are surprised at finding baths on an elevated plain, the springs of which have scarcely a temperature from ten to twelve degrees of the centigrade thermometer, and where the air cools as low as six or eight degrees.



## R A F T

OF THE

*RIVER OF GUAYAQUIL.*


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 PLATE LXIII.
 

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THIS drawing is interesting under a double point of view, as exhibiting a collection of the fruits of the equinoxial zone, and showing the form of those large rafts (*balzas*), which the Peruvians have used from the most remote times on the coasts of the South Sea, and at the mouth of the river of Guayaquil. The raft, loaded with fruits, is sketched at the moment when it is anchoring in the river. Toward the head are seen pine-apples, the pearshaped fruit of the *laurus persea* [the alligator pear], the berries of the *theophrasta longifolia*, bunches of plantains, flowers of the *passiflora* and *lecythis*, shaded by leaves of the *heliconia* and the cocoa tree. The rafts employed either for fishing or the conveyance of merchandise are from sixteen to twenty-five metres in

length, and are composed of eight or nine beams of very light wood \*. Don George Juan † has published some very curious remarks on the manner of working these barks, which, though of unwieldy appearance, sail very close to the wind.

\* Bombax and ochroma.

† Voyage Hist, de l'Amérique méridionale, tom. 1, p. 168.

**SUMMIT**  
**OF THE**  
*MOUNTAIN OF ORGANOS,*  
**AT ACTOPAN.**

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PLATE LXIV.

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THE porphyritic mountain of Mamanchota, known at Mexico under the name of *los Organos*, is situate to the north-east of the Indian village of Actopan. The spindle-shaped summit of bare rock is a hundred metres in height; but the absolute elevation of the top of the mountain, from which the Organos rises, is 1385 toises. It is on the road from Mexico to the mines of Guanaxuato, that the rock of Mamanchota is seen at a very great distance detaching itself from the horizon; and, towering amidst a forest of oaks\*, it exhibits a very picturesque appearance.

\* Essai Polit. sur la Nouvelle-Espagne, tom. 1, p. 289.

**MOUNTAINS**  
OF  
**COLUMNAR PORPHYRY**  
OF JACAL.

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PLATE LXV.

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THIS view was taken from the plain of Copal-  
linchiche, which forms a part of the great Mexi-  
can plain, and is thirteen hundred toises (2530  
metres) above the level of the ocean. The  
mountains of Oyamel and Jacal, composed of  
enormous columns of trappean porphyry, are  
crowned with pines and oaks. It is between  
the farm of Zembo and the Indian village of  
Omitlan, that the celebrated mines of *ixtli*, or  
obsidian, worked by the ancient Mexicans, are  
found. This spot is called in the country, *the  
mountain of knives, el Cerro de las Nabajas*. The  
summit of Jacal is sixteen hundred and three  
toises (3124 metres) in height. My sketch gives  
the outlines of the Cerro de Santo Domingo (1),  
of Mocaxetillo (2), of Orcones (3), and of Jacal,  
or Cerro Gordo (4).

A

## HEAD SCULPTURED IN HARD STONE

BY THE

*MUYSCA INDIANS.*

BRACELET OF OBSIDIAN.

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 PLATE LXVI.
 

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THE sculptured head is the work of the ancient inhabitants of the kingdom of New Grenada. The stone, considered by some mineralogists as a *smaragdite*, is undoubtedly nothing but a green quartz passing into hornstone. Perhaps this quartz, of extreme hardness, is tinged, like the *chrysoprase*, by the oxid of nickel. It is perforated in such a manner, that the openings of the cylindric hole are in planes cutting each other at right angles. We may suppose, that this perforation was made by means of tools of copper mixed with tin; for iron was not used either by the Muyscas or the Peruvians.



The obsidian bracelet was found in an Indian tomb, in the province of Mechoacan, in Mexico. It is extremely difficult to form an idea of the manner, in which so fragile a substance has been worked. The volcanic glass, perfectly transparent, is reduced to a plate, the curvature of which is cylindrical, and which is less than a millimetre in thickness.

VIEW  
OF THE  
*LAKE OF GUATAVITA.*

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PLATE LXVII.

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THIS lake is situate to the north of Santa Fe de Bogota, at the absolute height of more than fourteen hundred toises, on the ridge of the mountains of Zipaquira, in a wild and solitary spot. In the drawing are shown the remains of a flight of steps, serving for the ceremony of ablution ; and a cut in the mountains, which was attempted a short time after the conquest, to dry up the lake, and find the treasures, which, according to tradition, the natives had there concealed, when Quesada appeared with his cavalry on the plain of New Grenada.

## VIEW

OF THE

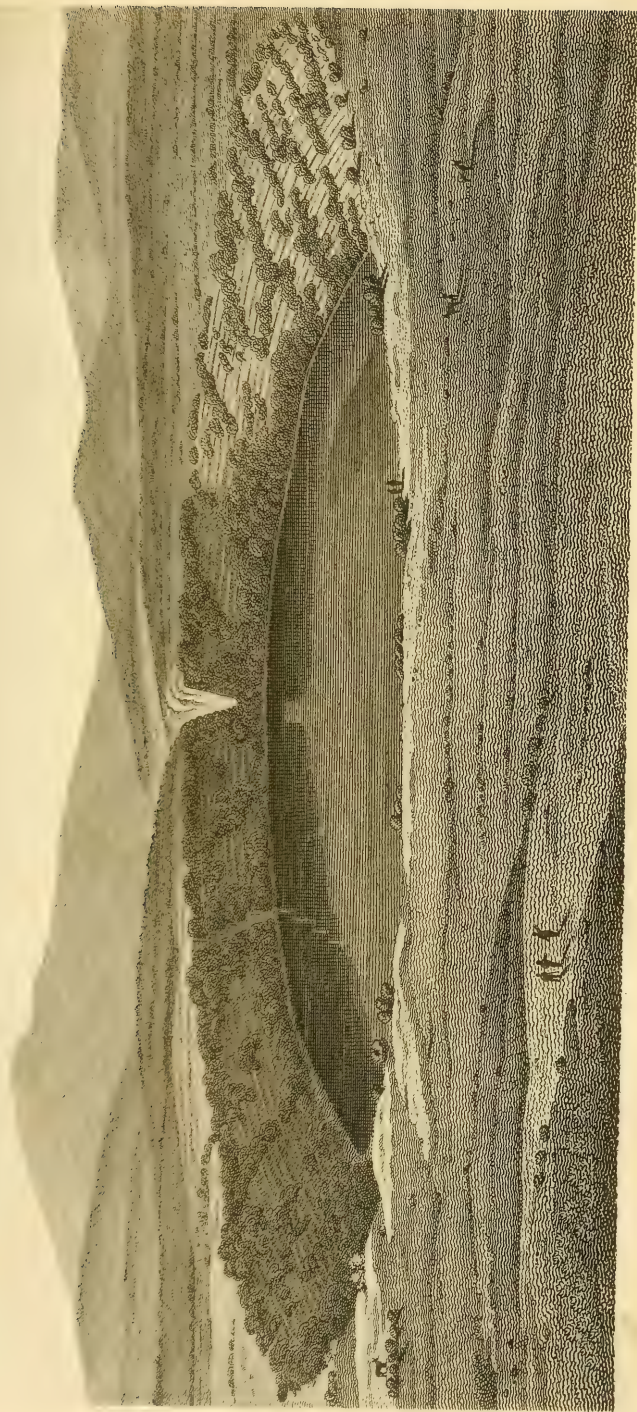
*SILLA DE CARACAS.*

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PLATE LXVIII.

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THIS granitic mountain, very difficult to scale, because its slope is covered with a close turf, is more than thirteen hundred and fifty toises in absolute height. From the coast of Paria to the Sierra Nevada of S<sup>a</sup>. Martha, no summit is found so lofty as the Silla de Caracas, called also *Montanna de Avila*. The two rounded summits bear the name of *the saddle (silla)*; and serve as land marks for the harbour of Guayra. I have sketched this mountain on the south side, as it presents itself from the coffee plantation of Don Andrew Ibarra.



*View of the Lake of Guatavita.*





THE  
**DRAGON-TREE**  
OF  
*OROTAVA.*

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PLATE LXIX.

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THIS plate is a representation of the colossal trunk of the *dracœna draco* in the island of Teneriffe, mentioned by every traveller, but which has never yet been engraved. It is between fifty and sixty feet in height ; its circumference near the roots is forty-five feet ; and it had attained this size, when the Spaniards landed first at Teneriffe in the fifteenth century. As this plant of the family of the monocotyledons grows extremely slow, it is probable, that the dragon-tree of Orotava is older than the greater part of the monuments of which we have given a description in this work.

## LETTER

*From Mr. Visconti, Member of the National  
Institute of France, to M. de Humboldt,  
on certain monuments of the American  
nations.*

IN perusing that part of your work, which concerns the monuments of the nations of America, and in which you have had the kindness to give me so valuable a testimony of your friendship, I have observed, among the great number of facts hitherto unknown, and observations altogether new, contained in these volumes, a few articles, in which my opinion differs from yours. This difference, it is true, relates only to some peculiarities of little importance, and my remarks may perhaps appear minute ; but as it concerns an entirely new branch of archæology, if I may make use of this term, to denote researches on the monuments of the new world, I have deemed it right to transmit to you a few observations on the subject : if they are just, they may contribute to the understanding and explanation of some

very curious monuments ; if they do not appear so to you, the confidence I have in your judgment will dissipate my doubts.

The first object that fixed my attention is the figure of a priestess, or, if you will, an Azteck princess (Plate 1 and 2). You think, that the ignorance of the sculptor has suppressed the arms of this figure ; and that he has had the awkwardness, to attach the feet to the sides. I have no higher idea than you of the skill of the statuary ; but it appears to me that this figure, though out of all proportion, is not mutilated. I think I perceive, that the extremities, which you take for feet, are the hands of the statue. It seems to be on its knees, and seated on its legs and heels, *ὀκλάζ καθημένη*, Lucian would say\*. This resting posture, suggested to men by nature itself, is carefully described by the Greek lexicographers, and particularly affected, in the monuments of the arts, in the figures of women, Hesychius, v. *ὀκλύαι* and *ὀκλάζειν* ; and Erotianus in his Lexicon on Hippocrates, v. *ὀκλασις* ; describe this posture by periphrases, which denote the attitude in which a person is seated on his legs and his heels : *ἐπὶ τῶν πτερυῶν καθέζεσθαι ἐπὶ τὰς κνήμας καὶ τὰς πτέρνας κάμψαντα τὰ γόνατα καθίσαι*. The learned Hemsterhuis conjectures, that the

\* *In Lexiphane.*

primitive verb, which expressed this state of repose, was *ὕκειν*; and that it was the root of a great number of Greek words, which passed afterward into other languages\*. It will be sufficient to cite the words *ὕκνος*, idleness; and *οἶκος*, a house, so familiar was this position in primitive and almost savage societies to men fatigued, during the peaceful moments they passed in the interior of their rustic retreats.

We see on the monuments of Egypt a great number of women represented in this attitude, either when suckling their children, praying at the feet of their idols, playing on some instrument, or exhibiting signs of affliction, at the funeral of their relations or countrymen†. We find also, on the same monuments, but much less frequently, men in this attitude‡. We might even be led to think, that the precept of the Pythagoreans, to pray sitting, referred in remoter times only to this posture used in the Egyptian

\* See in Hesychius d'Alberti, the notes on the word *οἰκίδδεν*.

† See in the magnificent work, *Description de l'Egypte*, vol. i, plate 12, No. 2; 62, No. 2; 69, No. 1; 70, No. 2; 81, 96, and elsewhere; and in the *Voyage dans la Basse et Haute Egypte*, by M. Denon, the pl. 126, 131, et 135.

‡ Sculpture de la Villa Borghese, St. 8, No. 4: Winckelmann, *Hist. de l'Art*, &c., edition of Rome, tom. i, pl. 6.

rites. It is so natural, especially to women, on account of the suppleness of their limbs, that in several countries of Italy the female peasants assume this posture habitually in the churches. We ought not then to be surprised, that it was in use among the Azteck women. We find it in some of the symbolical paintings of this nation ; in the 26th plate, the goddess of water, who throws herself on the earth to drown it, is represented seated on her heels ; and several other figures, in other Mexican paintings, are nearly in the same position, except that they have only one knee on the ground. As to what relates to the statue, on which I have now the honor of addressing you, it seems to me, that the back part of this figure (Plate II) furnishes a certain proof of what I have just advanced. We distinctly see the feet, the toes of which are very clearly indicated ; they are placed one against the other, and the shading discovers in the drawing (Plate I) the prominence of the knees, concealed under the stiff and plain drapery, which envelops the whole figure.

Not to enlarge farther on this curious specimen of the arts of a nation almost extinct, I shall confine myself to the remark, that the excessive size of the head is a common defect in the greater part of the works of this people. The same defect is very perceptible in the figures sculptured



on the covers of the Etruscan cinerary urns. It appears, that the intention of expressing with more precision and exactness the features of this principal part was the motive, with ignorant artists, to enlarge it to such a degree of exaggeration.

I proceed to another observation, which suggested itself to me from the examination and explanation of one of the hieroglyphic paintings I have just cited, and on which you have read a memoir to our class. The four destructions of the world are there represented (Plate 26). You compare these periods to the four ages of the mythology of the Greeks; and as you find five ages of the world in the traditions of the Aztecks, you endeavour to make this difference disappear, by proving, that the age of brass in Hesiod may easily be divided into two, on account of the two generations which the poet there describes (vol. xiv, p. 31). I would observe, that Hesiod, as well as the Aztecks, counted five ages, reckoning, like them, that which was not yet consummated, and in which he lived. He says in express terms (*Opera et Dies*, v. 174.)

Μῆμετ' ἔπειτ' ὧφειλον ἐγὼ πεμπτοισι μετεῖναι.

“ Oh why did Fate ordain me to be among the men of the fifth age !”

This tradition of the five ages must have been known to the Chaldeans, if we might be permitted to adopt the conjecture of Dante\*, that the colossal figure, seen by Nebuchadnezzar† in his dream, referred to this opinion. It was composed of five distinct, and separate kinds of matter : gold, silver, brass, iron, and clay.

I have one more observation to make to you of as little importance as the preceding, respecting the manner in which the Aztecks traced their hieroglyphics. You remark (page 34), that, to facilitate the reading of these figures, and to comprehend them, they sometimes placed at the end of a line the first signs, or rather the first characters, of the hieroglyphic phrase of the following line ; and that by these means these first signs are repeated. You compare, on the testimony of Mr. Zoega, this method with that of the Egyptians ; who, according to him, made use of the same mode in their hieroglyphic writing. I cannot help observing to you, that my researches have not convinced me of this analogy. If you have no other authority than the passage in p. 464 of the profound work of the Danish antiquary on the obelisks, I must confess, that I give quite another meaning to his expressions ; and I must add, that my manner of understanding them

\* *Inferno*, c. 14.

† *Daniel*, c. 2.

seems to be confirmed by the examination of the monuments themselves. Mr. Zoega, in order to prove, that, in the hieroglyphical writing, the direction in which the figures of men and animals are turned, decides whether the hieroglyphic line ought to be read from the left to the right, or from the right to the left, makes use of certain series of signs, which are repeated in the same monuments, and which are sometimes found traced wholly in the same line, sometimes half in one line and half in another : for instance, in the Sallustian Obelisk\* one of these series presents the figure of a dove, followed by those of a beetle and a knife, all in the same line. This series is repeated on the same column, but the hieroglyphics are distributed in two lines. In following the rule proposed by the learned antiquary, the figures are found in the same order, so that the beetle and the knife still follow the dove.

This is what Mr. Zoega says in terms less clear†. But if, in consequence of this remark,

\* See in Mr. Zoega's Work, de Origine et Usu Obeliscorum, the plate entitled, Obeliscus Sallustianus Lat. septentrionale.

† *Nam præter quod hac ratione antecedens figura sequenti dorsum obvertere et eam post se relinquere agnoscitur, etiam in repetitis inscriptionibus, dum propter loci angustiam nota aliqua ex superiore spatio ad inferius sic removenda, hoc in ea fieri videmus quæ ex illa nostra sententia ultima erat superioris spatii.* (Zoega loco citato.)

I deprive you of a happy analogy, I will immediately make you amends, by presenting you with a similar analogy in the method followed by the Hebrews in tracing their manuscripts. When they cannot place the whole of a word in one line, they trace the first characters of it at the end of that line, and write it entire in the following ; so that these first characters are written twice, exactly as you have remarked in the Azteck manuscripts, or rather paintings. This method has been followed in several editions of the Bible printed in Hebrew, so true it is, that the mind of man, notwithstanding the difference of ages and climate, is disposed to act in the same manner in similar circumstances, without needing the aid either of tradition or of example.

I refer to this same principle the invention of the machine for the production of fire by the friction of two pieces of wood \*. It was not Mercury, surely, who taught the use of the *pyreïa*, or the *igniaria*, to the Indians on the banks of the Orinoco. No Greek monument exhibits this custom of heroic times, while you twice give the representation of it in the hieroglyphical paintings of the Aztecks †. Nevertheless it was familiar to the ancient inhabitants of Greece ; and the figures you have published prove the accuracy

\* Vol. xiii, p. 225, 226.

† Plate 15, No. 8, and plate 47.

of the description, which the scholiast of Apollonius has left us of these machines for kindling fire\*. He says, that the upper wood, which turns, resembles a wimble: παραπλήσιον τρυπάνω and such is the idea given by your paintings. No philologist has remarked the allusion, which Apollonius makes in this place to the passage of the Homeric hymn to Mercury. This allusion however seems to me calculated to dispel the doubts, which the learned Rhunkenius has raised respecting the interpolation of this passage †.

The resemblance of the *pyreia* to the wimble must be referred to the early period of the invention of this tool; and we might be surprised at finding it attributed to Dedalus‡, who was a contemporary of Theseus, if the invention of the Athenian artist did not agree more exactly with the trepan of sculptors, a much more perfect instrument than the mere wimble, from the rapidity which the cord and the moving traverse give to its motion. This connexion between the *pyreia* and the wimble has not escaped the ancient writers, who treat of the culture of trees ||. They complain, that the action of the borer, employed

\* Liv. 1, v. 1184.

† *Ep. crit.* 1, *ad Hymn. in Mercurium*, v. 25.

‡ Pliny, lib. 7, § 57.

|| *Ibidem*, lib. 17, § 25; Columella, lib. 4, v. 29.



in making perforations in them, often burned the wood, and was fatal to the success of the operation. It was to avoid this inconvenience, that the Gauls invented another kind of borer, (*terebra gallica*), which was a real gimlet, the more regular and less rapid action of which would not occasion combustion. It appears to me, that the commentators of Pliny have hitherto given no just idea, either of the invention of Dedalus, or of the Gallic borer.

Such, my dear Colleague, are the observations which I wish to submit to your judgment. Your friendship, I trust, will consider them as a proof of mine, and of the lively interest which I take in your labours.

E. Q. VISCONTI.

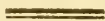
*Paris, the 12th of December, 1812.*



## NOTES

TO

## VOLUME THIRTEEN.



PAGE 81. The pyramid of Cholula bore also the names of Toltecatl, Ecaticpac, and Tlachihuatepetl. I presume, that this last denomination is derived from the Mexican verb *tlachiani*, to see around oneself, and *tepetl*, a mountain; because the Teocalli served as a watch tower, to reconnoitre the approach of an enemy in the wars, which were perpetually occurring between the Cholulains and the inhabitants of Tlascala. On the important question, whether the temple, or rather the pyramid with steps, dedicated to Jupiter Belus, had served as a model for the pyramids of Sakhara, and those of India and China, see Julius von Klaproth, *Magasin Asiatique*, tom. 1, p. 486 (in German).

Page 173. It has recently been doubted, whether the Peruvians were acquainted with symbolic paintings, in addition to their *quippus*. A passage taken from the *Origen de los Indios del Nuevo Mundo* (Valencia, 1610), p. 91, leaves no uncertainty on this point.

After speaking of the Mexican hieroglyphics, P. Garcia adds; "At the beginning of the conquest, the Indians of Peru made their confessions by paintings and characters, which indicated the ten commandments, and the sins committed against these commandments." Hence we may conclude, that the Peruvians made use of symbolical paintings; but that these were more grotesque than the hieroglyphics of the Mexicans, and that the people generally made use of knots, or *quip-pus*. See also Acosta, *Historia natural y moral de las Indias*, book 5, chap. 8, p. 267.

Page 276. The word *atl*, or *atel*, is met with in the east of Europe. According to the observation of Mr. Frederick Schlegel, the country inhabited by the Madjares, before the conquest of Hungary, bore the name of *atelkusu*. Under this denomination were comprised Moldavia, Bessarabia, and Walachia, three provinces bordering on the mouths of the Danube; which, like the Wolga, bore the name of the great water, *atel*. (See vol. xiii, p. 349). The Mexican hieroglyphic of water, *atl*, indicated, by the undulation of several parallel lines, the motion of the waves; and recalls to mind the Phenician character of water, *mem*, which has passed into the Greek alphabet, and by degrees into that of all the western nations. See the ingenious work of Mr. Hug, on the Invention of Letters, 1801, p. 30.

The Chevalier Boturini has transmitted to us the names of the twenty days of a Tolteck month, from the calendar of the inhabitants of Chiapa and Soconusco. The following are the signs, with those corresponding to them in the Azteck Calendar.

Mox.	Cipactli.	Voltan.	Calli.
Igh.	Ehecatl.	Ghanan.	Cuetzpalin.

Abagh.	Cohuatl.	Been.	Acatl.
Tox.	Miquiztli.	Hix.	Ocelotl.
Moxic.	Mazatl.	Tziquin.	Quauhtli.
Lambat.	Tochtli.	Chahin.	Cozcaquauhtli.
Mulu.	Atl.	Chic.	Ollin.
Elab.	Itzcuintli.	Chinax.	Tectpactl.
Baz.	Ozomatli.	Cahogh.	Quiahuitl.
Enob.	Malincalli.	Aghual.	Xochitl.

We are surprised to find, among nations of the same race, names of a character so different. The terms of Mox, Igh, Tox, Baz, Hix, and Chic, do not seem to belong to America, but to that part of Eastern Asia, which is inhabited by nations, whose languages are monosyllabic. (See vol. xiii, p. 313, and Boturini, *Idea, de una Historia general de Nueva Espanna*, p. 118.) We shall on this occasion observe, that the Chinese termination *tsin* is found in a great number of Mexican proper names; for instance, in Tonantsin, Acamapitsin, Coanacotsin, Cuitlahuatsin, and Tzila-catsin.

According to the learned researches of Mr. Klaproth, the Ouigours, or Uighurs, never inhabited the banks of the Selinga, as Mr. Langles admits; but the mountains Ulugh-tagh, the banks of the Ssir, which is the Jaxartes of the Ancients, and the steppe of the Kara-Kun, to the east of the lake Aral (See vol. xiii, p. 306, and Hammer, *Mines de l'Orient*, tom. 2, p. 194).

Page 409. To throw more light on the researches, which form the object of my memoir on the Mexican calendar, I shall here insert the very judicious observations, that have been communicated to me by Mr. Jomard. The name of this distinguished gentleman is well known to those, who study the antiquities of



Egypt\*. I here insert an extract of a letter, which he has lately addressed to me.

“ \*\*\* I have also recognised in your memoir on the division of time among the Mexican nations compared with those of Asia some very striking analogies between the Tolteck calendar and institutions observed on the banks of the Nile. Among these analogies there is one, which is worthy of attention. It is the use of the vague year of 365 days, composed of equal months and of five complementary days, equally employed at Thebes and Mexico, a distance of 3000 leagues. It is true, that the Egyptians had no intercalation, while the Mexicans intercalated 13 days every 52 years. Still farther, intercalation was proscribed in Egypt to such a point, that the kings swore on their accession, never to permit it to be employed during their reign. Notwithstanding this difference, we find a very striking agreement in the length of the duration of the solar year. In reality the intercalation of the Mexicans, being thirteen days on each cycle of fifty-two years, comes to the same thing as that of the Julian Calendar, which is one day in four years ; and consequently supposes the duration of the year to be 365 days six hours. Now such was the length of the year among the Egyptians, since the sothic period was at once 1460 solar years, and 1461 vague years ; which was in some sort the intercalation of a whole year of 375 days every

\* See the interesting memoirs of Mr. Jomard, on the Lake Moeris compared with the lake of Fayoum, on Syene and the cataracts, on the island of Elephantina, on Ombos and its environs, and on the antiquities of Edfou and Hermontgis, making a part of the Description of ancient and modern Egypt, for which we are indebted to the munificence of the French government.

1460 years. The property of the sothic period, that of bringing back the seasons and festivals to the same point of the year, after having made them pass successively through every point, is undoubtedly one of the reasons, which caused intercalation to be proscribed, no less than the repugnance of the Egyptians for foreign institutions. Now it is remarkable, that this same solar year of 365 days six hours, adopted by nations so different, and perhaps still more remote in their state of civilization than in their geographical distance, relates to a real astronomical period, and belongs peculiarly to the Egyptians. This is a point, which Mr. Fourier will ascertain in his reseaches on the zodiac of Egypt. No one is more capable of deciding this question in an astronomical point of view. He alone can elucidate the valuable discoveries, which he has made. I shall here observe, that the Persians, who intercalated thirty days every hundred and twenty years; the Chaldeans, who employed the era of Nabonassar; the Romans, who added a day every four years: the Syrians, and almost all the nations who regulated their calendar by the course of the Sun; appear to me, to have taken from Egypt the notion of a solar year of 365 days  $\frac{1}{4}$ , the use of equal months, and that of the five complementary days. As to the Mexicans, it would be superfluous to examine how they attained this knowledge; such a problem would not be soon resolved: but the fact of the intercalation of thirteen days every cycle, that is, the use of a year of 365 days and  $\frac{1}{4}$ , is a proof, that it was either borrowed from the Egyptians, or that they had a common origin. It is also to be observed, that the year of the Peruvians is not solar, but regulated according to the course of the Moon, as among the Jews, the Greeks, the Macedo-

nians, and the Turks. However the circumstance of eighteen months of twenty days, instead of twelve months of thirty days, makes a very great difference. The Mexicans are the only people, who have divided the year in this manner.

“ A second analogy, which I have remarked between Mexico and Egypt, is, that the number of weeks, or half lunations of thirteen days, comprehended in a Mexican cycle, is the same as that of the years of the sothic period; this number is 1461. You consider such a relation as accidental and fortuitous; but perhaps it might have the same origin as the notion of the length of the year. If in reality the year was not of the length of 365 days 6 hours, that is  $\frac{1461}{4}$  days, the cycle of fifty-two years would not contain  $\frac{52 \times 1461}{4}$ , or thirteen times 1461 days; which makes 1461 periods of thirteen days. We must however admit, that these weeks of thirteen days, these *tlalpilli* of thirteen years, this intercalation of thirteen days at the end of the cycle, finally these cycles of four times thirteen years, repose on a first number, which is absolutely foreign to the Egyptian system.

“ You have pointed out a fact of more importance, inasmuch as it appertains to the manners of nations, which is the festival of the winter solstice, celebrated equally by the Egyptians and the Aztecks. The former, if we may believe Achilles Tatius, put on mourning, on seeing the Sun descending toward Capricorn, and the decrease of the day; but when the Sun returned toward the Crab, they clothed themselves in white, and decorated themselves with crowns. The custom of the Mexicans, as you have described it, is no doubt analogous with the Egyptian festival. This

cannot be contested, without placing at some other period the beginning of the Mexican year, as many authors have done. But you have rendered it certain, that, at the renewing of the cycle, this beginning fell on the 9th of January, consequently in reckoning 13 intercalary days, and the complementary days with which the festival began, the new fire was kindled at the winter solstice.

“It may be asked, why the phenomenon of the diminution of the days affrighted the Mexicans only once every fifty-two years, as if at the end of a cycle the Sun descended lower than usual. Was it from the omission of a solemnity, that they did not perceive the shortest appearance of the Sun, and that they waited the signal to give themselves up to mourning and terror? I conceive, that, if the festival had taken place every year on the same day, they would have lamented the retreat of the Sun at the moment when it was visibly returning; but in order not to awaken their sorrow at an improper time, it was easy to advance the festival one day every four years, so that in every fifty-two years it would have occupied thirteen different days. This is a difficulty, which I cannot solve with respect to the Egyptians\*. Achilles Tatius does not mention the epocha, at which it took place: he makes use only of the vague expression a *day*, *ποτε* (Uranol. page 146); and adds, that it was at the time of the festivals of Isis, without saying whether the celebration was practised every year. If it had been so, we should have seen, in the course of a sothic

\* Geminius pretends, contrary to the opinion of the Greeks, that the festival did not take place on the day of the solstice, and that it ran through the whole of the days of the year successively during a sothic period. (Uranol. p. 34).

period, the Egyptians, from the fear of being deserted by the Sun, give themselves up to grief, tear their hair, and rend their clothes, at the moment when the Sun was in the zenith, and darted its fiercest fires. This is not probable. Achilles Tatius has been too laconic on this point, for us to comprehend this pretended custom of the Egyptians. If the festival took place every year on the same day, it was absurd during fourteen ages and a half of a sothic period; if it took place only on the year of the renewal of the period, why in preference on that year? and finally, if the festival was advanced a day every four years, we must admit, that the Egyptians lamented unnecessarily the approaching disappearance of the Sun, since at Thebes, at the winter solstice, it was an elevation of about forty degrees.

“ You have drawn a comparison between the Mexican years and days, and the names of the signs of the Tartar zodiac and the different zodiacs of the old continent. You have shown, that at Mexico they said, rabbit, tiger, or ape day, &c.; as in Asia they said hare, tiger, and ape month, &c.: you have shown also, that several of these animals are equally unknown in Tartary and in Mexico; and this last remark leaves room to think, that the use of the periodical series for the calculation of time, common to the Mexicans and the Asiatics, as well as these denominations, might come from a very different and very distant country. These questions are highly interesting; but I shall here confine myself to the resemblance of one of the signs of the Aztecks, that of *Cipactli*, with the *Capricorn* of the Greek, or rather Egyptian zodiac: this is the only one of the twenty names of Mexican days that affords this analogy. Is it not remarkable, that



*Cipactli* is the first sign of the days, as *Capricorn* is at the head of the signs of the zodiac? Whatever be the variation in the order of the signs of the different zodiacs, this analogy of position for the first of the whole appears to be proved; and I think I see in it a confirmation of the origin of the Egyptian zodiac. Whether the colure of the summer solstice has been observed in the first degree of *Capricorn* or not, it is now certain, that our zodiac, which is that of the Romans and Greeks, and which was copied by them from Egypt, belongs essentially to this last country, and to it alone; and that it cannot possibly be explained, but by making the summer solstice go back as far as *Capricorn*. Now the rural year of the Egyptians began at the summer solstice. We must not then be surprised, that *Capricorn* should heretofore have occupied the first place among the dodecatemotions. If we knew at what epoch the year formerly began in Tartary, Thibet, or Japan, we might deduce something analogous from the position of *Aquarius* at the head of the zodiac among these different nations. In reality, the first sign is the Rat, which corresponds to *Aquarius*. *Mahara*, the sea-monster of the zodiac of the Hindoos, corresponding to *Capricorn*, holds in it the second place, which still supposes *Aquarius* to be the first. Thus the successive positions of the solstitial colure in *Aquarius*, in *Capricorn*, and subsequently in *Virgo*, *Leo*, and *Cancer*, would be indicated by the most ancient and authentic monuments, namely, the zodiacs of nations. But I do not insist on this idea, which I am not yet permitted to support by its proofs; I shall only observe, that the placing *Capricorn* at the head of the signs in Egypt and in Mexico affords an additional analogy between the two countries.

“ You have also observed, that the Fishes of the Egyptian zodiac are accompanied by a hog, an animal which in the zodiac of Thibet occupies the place of the constellation of the Fishes ; and that Libra answers to the Dragon of the Tartar zodiac ; the name of which has its equivalent in *Cohuatl*, or serpent, the name of one of the Mexican days. This sign of the Balance, the antiquity of which has been so unreasonably doubted, is found in the dodecatemorions of the Indians, and in their lunar houses, as well as in the Egyptian zodiac. They who object, that it is not a ζῳδιον, seem not to know, that it is always represented by a human figure bearing a pair of scales, as the ear of wheat is borne by the Virgin, and the vessel of water by Aquarius. If the Balance were a sign added by the Romans, who could have sculptured it at Elephantia ? It is true, that, before the time of Augustus, the Scorpion occupied the place of two signs by its extent in the zodiac of the Greeks and Romans. Vitruvius is the first writer, in whom we find the word *Libra*. Aratus, Eudoxus, Hipparchus, to denote the sign of the Balance, had made use of the word χηλαι, which signifies *claws* of the Scorpion. But after the conquest of Egypt by Julius Cæsar, the Romans frequently visited that country, where they no doubt observed the Balance on the monuments, and adopted its use. Germanicus, who, according to Tacitus, examined the antiquities of Egypt, translated the poem of Aratus, as Cicero had done ; but he did not like him render the word χηλαι by *chela*. He made use of the word *libra* ; and we find that Virgil, Manilius, Vitruvius, Hyginus, Macrobius, Festus-Avienus, &c., all posterior to the conquest of Egypt, speak also of the Balance. The same may be said of Ptolemy and

Achilles Tatius. The Chaldeans rather than the Egyptians might be suspected of not having been acquainted with the Balance, since Servius, in his commentary on those well known verses,

Anne novum sidus tardis te mensibus addas, &c.

observes, that the Chaldeans divided the zodiac into eleven constellations, and the Egyptians into twelve. The commentary of Germanicus puts the question in the clearest light, by showing, that the Balance of the Egyptians was what the Greeks named *chelæ*; and I find that Eratosthenes makes the same remark: *χηλαί δ' ἐστὶ ζυγός*. Whence could he have taken this similitude, if the Balance did not exist in his time? Eudoxus was a Greek; and, in speaking to Greeks, it was right for him to employ the name of *chelæ*, which was known to them: but Eratosthenes writing in Egypt, and explaining the Greek sphere, could determine to what Egyptian sign this name answered. We also know, from the Zend Avesta, that the ancient Persians were acquainted with the astronomical Balance; and St. Epiphanius says the same of the Pharisians. What is there in fine more positive, than this passage of Achilles Tatius? "the *chelæ*, which the Egyptians call the Balance." (Uranol., p. 168.) But I should never finish, were I to cite every author. With respect to the monuments, we are so little acquainted with them, and they are so recent, except those of Egypt and India, that they give us no information respecting the antiquity of this asterism; but of this antiquity every thing bears proof. Even at Rome, before the Balance was placed in the heavens, the name was known. Cicero employs the word *jugum*; it is the same with Varro; Geminus makes use of the word *ζυγός*.

The school of Alexandria was not ignorant of the existence of this sign ; but it was necessary to consummate the ruin of Egypt, in order to open in some sort the temples, to procure the knowledge of the Egyptian planisphere, and furnish the image of the Balance, which the Romans have borrowed and transmitted to us.

“ If I have limited myself to the antiquity of the sign of the Balance, already demonstrated by others ; it is because this point is intimately connected with the system of the Egyptian zodiac ; which appears, Sir, not to be your opinion, since you admit rather the antiquity of this asterism in Egypt, than the idea of the motion of those that are fixed. What may be uncertain in the period attributed to the monuments of the Thebaid is the determination of a precise year, and not an approximation to a date within certain limits. We need not be deeply versed in astronomy, to recognise the point of the heavens, or the constellation, which the Sun occupies at the moment of its apogee ; but, since this point perpetually changes, it is utterly impossible to depict it at the same place during twenty or forty successive ages. Is it at all surprising that the people, with whom this point constituted the beginning of the year, should denote it successively by the Virgin, the Lion, the Crab, and antecedently no doubt by other signs ? I will not on this account deprive the Egyptians of the merit of this discovery, or of every other that has been transmitted to us by the Greeks, so ready in appropriating discoveries to themselves ; I wish only to observe, that it was natural for them to mark the opening of their year at the place where they saw it begin.

“ You have drawn the attention of the learned to the monument of Bianchini. This planisphere brings to my remembrance, that we saw at Panopolis a similar

zodiac, composed of concentric circles divided into twelve compartments ; and which Pocock had cursorily noticed. I had not time to make the excavations necessary in order to take a copy. I saw in it a figure of a bird, such as you remark in the planisphere of Bianchini, where it corresponds with the Ram ; while in the Tartarian and Japanese zodiac the bird answers to the Bull. It is possible that this marble, as well as the Isiac table, was sculptured in Egypt, or after an Egyptian work ; but it has certainly been so by a foreign artist, and with no great fidelity."

These observations in Mr. Jomard's letter regard several very important points in ancient astronomy : the use of a vague year of 365 days 6 hours, the festivals which are connected with physical phenomena, and the constellations of the solar zodiac. There no doubt exists a species of elementary astronomy, which may be called natural ; and which, in the same stage of civilization, must have presented itself to nations among whom no direct communication existed. To this science belong the first notions respecting the number of the full moons corresponding to a solar revolution ; the time by which this revolution exceeds 365 days ; the 27 or 28 equal parts of the sky, through which the Moon passes during one lunation ; the stars that are caused to disappear by the first rays of the Sun ; the length of the shadows of a gnomon ; and the method of tracing a meridian by the means of corresponding heights, or shadows of equal length. A mark selected at the horizon, a tree, or the summit of a rock, with which the place of the rising or setting Sun is compared ; a slight attention to phenomena repeated at short intervals of time ; are sufficient to lay the basis of this natural astronomy. *Fréret, Ouvres, complètes, tom.*



12, page 78.) The dodecatemorion of the ecliptic; the lunar houses; intercalations of a day in four years, or of a multiple of these numbers; means tried to conciliate the lunar with the solar almanac, and to make the same terms of the periodical series coincide with the same seasons; the use of gnomons; the importance attached to the periods, when the shadows are longest or shortest; the horrors felt at the end of a great year; the idea of a regeneration at the beginning of a cycle; all these find their source in the observation of the most simple phenomena, and in the individual nature of man.

We must here again observe, that it is very difficult, to distinguish between what nations have taken as we may say from themselves and the objects which surround them, and what has been transmitted to them by other nations advanced in the arts. Hieroglyphics and symbolic writing arise from the need men feel of expressing their ideas by visible figures. A *tumulus* or pyramids are erected by the accumulation of earth and stones, to mark a place of burial. Meanders, labyrinths, zigzags, are found every where; either because men are generally satisfied with a rhythmic repetition of the same forms, or because they have taken as models the regular figures traced on the skin of large aquatic serpents, or on the shell of the tortoise. A half civilized people, the Araucans of Chili, have a year (*sipantu*), which exhibits a still greater analogy with the Egyptian year than that of the Aztecs. Three hundred and sixty days are divided into twelve months (*ayen*) of equal duration, to which are added at the end of the year, at the winter solstice (*huamathipantu*), five complementary days. The *nycthemera*, like those of the Japanese, are divided into twelve hours (*elagan-*

tu). It is possible, that the Araucans may have received this division of time from eastern Asia, deriving it from the same source from which the Asiatic cycle of twenty times thirty-seven *sunas*, or sixty years, came to the Muyscas of Cundenamarca; but we find nothing inconsistent with the admission of the calendar of the Araucans having taken its birth in the new continent. Several nations have at first had years only of 360 days; not because solar revolutions had formerly a shorter duration, as we are gravely assured by an estimable writer, Count Carli; but because a stop was made at a round number, the result of a first view of the length of the years. Twelve full moons, observed during the interval of about 360 days, led to months of thirty days; and the complementary days were added on perceiving the confusion arising from the employment of years too short. In the manners and customs of nations, as in the analogy of languages with each other, there are certain marks, by which we directly recognize the identity of origin, or the communications that have existed between one people and another. We conceive, for instance, that the signs of our solar zodiac may have taken their denominations in Egypt, in India, or in some other region watered by great rivers, and placed under the same parallel; but, these denominations once fixed, we can no longer doubt, that the nations, who employ the same asterisms, have received them one from the other. It is thus we distinguish in languages that community of roots, which are as it were the arbitrary signs of things; or those grammatical forms, which seem founded on mere caprice; from whatever is connected with imitative harmony, the structure of our organs, or the nature of our intelligence.

The priests of Heliopolis, consulted by Herodotus, boasted, that the first of all men, the Egyptians, had invented the division of the year into twelve parts.

\*Ἐλεγον ὁμολογούντες σφισι, πρωτους Αἰγυπτίους ἀνθρώπων ἀπάντων ἐξευρέειν τὸν ἐνιαυτὸν δωδεκα μέρεα δασαμένους των ὥρων ἐς αὐτόν (Herod., Lib. 2, ed. Wessel., p. 104). We think that this invention belongs no more to the Egyptians, than the mode of numeration by groups of five, ten, or twenty, belongs to a single people by whom it has been transmitted to other nations in very distant countries.

The calendar of the Egyptians, after having been the object of the learned researches of Fréret, de la Nauze, and Bainbridge, has been farther illustrated in our own times by the labours of Mr. Ideler, who unites to a profound knowledge of the ancient languages that of astronomical calculations. We shall not discuss the question whether different calendars, and various modes of intercalation, were in use at the same time on the banks of the Nile, as several learned men have asserted in their interpretation of passages of Theon, Strabo, Vettius Valens, and Horapollo (De la Nauze, *Mém. de l'Acad. des Inscript.*, tom. 14, page 351: Fréret, *Ouvres*, tom. 10, page 86; tom. 11, page 278; Bainbridge, *Canicularia*, p. 26; Scaliger de *Emendat. Tempor*, lib. 3, p. 196: Gatterer, *Abriss der Chronologie*, p. 233: Id. *Weltgeschichte bis Cyrus*, page 211, 507, and 567: Ideler, *Histor. Untersuchungen*, p. 100: Rode, *ueber Dendera*, page 43). We shall confine ourselves here to a few remarks on the movableness of festivals.

In Egypt and Persia, where the vague year was in use; in Greece and in Italy, where imperfect intercalations often deranged the calendar; the festivals con-

nected with physical phenomena must have lost all interest with the people, if they were celebrated sometimes at one season, and sometimes at another. On the banks of the Nile, as well as those of the Tiber, distinctions were doubtless made between the festivals attached to the date of a month (*feriæ stativæ*), and those announced by the priests at the periods pointed out by the motives of their institution. These latter festivals were named among the Romans *feriæ conceptivæ*; and a distinction was made between the *sementivæ*, the *paganalia*, and the *compitalia* (Marini, Atti de Fratelli Arvali, tom. 1, p. 126). In Egypt, the festival of Thoth, which shared with the month of this name the whole of the seasons during the sothic period, did not probably coincide with a festival celebrated in honour of the heliacal rising of Sirius. Is it likely, that processions, in which the emblems of water were the most prominent, took place in times of the greatest drought? The passage of Geminus, it is true, is very explicit: *Βέλλονται γὰρ (οἱ Ἀιγυπτιοὶ) τὰς θυσίας τοῖς Θεοῖς μὴ κατὰ τὸν αὐτὸν καιρὸν τοῦ ἐνιαυτοῦ γίνεσθαι ἀλλὰ διὰ πασῶν τῶν τοῦ ἐνιαυτοῦ ὥρων διελθεῖν, καὶ γίνεσθαι τὴν θερινὴν ἔσρην, καὶ χειμερινήν, καὶ φθινοπωρινήν, καὶ ἱσρινήν* (Elem. Astronom. cap. 6).

Geminus of Rhodes, who lived in the time of Sylla and Cicero, censures Eudoxus, and the Greeks in general, for having supposed, that the feast of Isis corresponded constantly to the winter solstice; while, according to the vague year, it must have run through thirty days in the space of a hundred and twenty years. But if it were admitted, that all the festivals, which correspond to the seasons and the astronomical phenomena, were attached to the dates of the months of Phamenoth, Pachon, or Mechir, what be-



comes of the ingenious explanations given by Plutarch in his treatise de Iside et Osiride, of the motives for which the Egyptians celebrated such a festival in the spring, and another at the summer solstice (Plut. Opera omnia, ed. Reiske, tom. 7, page 446, 452, and 484)? These connexions between the ceremonies celebrated and the physical phenomena, this intimate relation between the symbol and the object, would then have taken place in the first year only of each sothic cycle. The very just observation made by Mr. Jomard on the passage of Achilles Tatius is applicable to all the *stative* festivals. That of Isis, mentioned by Geminus and Plutarch, was a lugubrious festival; and if it was not *conceptive*, it sometimes took place at periods when the days had been for a long time on the increase (Uranol., page 19, nota 35). Does not the oath, which the priests imposed on the king for the preservation of the vague year (Comment. in German. interpret. Arati, sign. Capricorni; Hygin., ed. Basil., 1535, p. 174), betray the craft of a privileged order, which, for the sake of rendering itself necessary to the people, and keeping up its authority, arrogates to itself the right of announcing the festivals connected with astronomical phenomena?

Plutarch, living under the reign of Trajan, already made use of the fixed year of the Alexandrians, according to which, the first of Thoth corresponds to the 29th of August of the Julian calendar (Ideler, Hist. Unt. pag. 127); and he refers the names of the months and the festivals to the immutable epochas of the solstices and the equinoxes. Achilles Tatius, a Christian, and probably a bishop, lived several ages after Plutarch: it is therefore needless to admit, with de la Nauze, the existence of a fixed year under the



Ptolemies, in order to explain why Achilles Tatius speaks of the moans of the Egyptians at the festival of Isis, as a custom immutably connected with the period of the winter solstice. If moreover among the Mexicans we find no renewal of this apprehension of the approaching disappearance of the Sun till after fifty-two vague years, we may no doubt attribute it to the importance which every nation attaches to the end of a great cycle. We observe even at the present time, that the last day of the year bears with it an air of solemnity among nations very remote from superstitious ideas (*Oeuvres de Boullanger*, 1794, tom. 2. p. 61).

In Mexico, as well as at Thebes, the Sun is still considerably elevated at the period when its south declination begins to diminish; and we might say, that the fear of the total disappearance of this luminary ought rather to be excited in those regions of Asia, where Mr. Bailly places the origin of astronomy, than among the nations near the tropic. Nevertheless, it may be conceived how, in a worship, the symbols of which related to the state of the heavens, ideas of a progressive lowering of the Sun, and the shortening the duration of the days, however little apparent these phenomena may be, lead to lugubrious ceremonies, to the expressions of sorrow and of fear.

As to the asterism, to which different nations have assigned, at different periods, the first place in the zodiac, this is one of the most interesting investigations in the history of astronomy. As years begin either by the solstices or by the equinoxes, the order of the signs, or rather the preference given to one of them which opens the march of the asterisms, fixes the date of the origin of the zodiac. Under this point of

view, by the effect of the precession of the equinoxes, the mere series of the signs becomes an unequivocal historical document, if we at the same time suppose, 1st, that the nation, in which this document is found, has not made use of the vague year; 2dly, that it has not thought proper to trace, after systematic ideas, the ancient state of things, the point of departure, the beginning of a cycle. The nations of eastern Asia calculated, by means of tables of no great accuracy, the position of the planets for very remote periods. Their books speak of a conjunction of all the planets, which seems rather the result of their calculation than of observation. Is it not very possible, that a monument may be discovered some day or other in India, on which this conjunction has been traced, without our being obliged for this reason to attribute a high antiquity to such a monument?

No passage in the ancients forms a direct proof, that the Egyptians had any knowledge of the precession of the equinoxes. Hipparchus made this discovery by comparing his observations with those of Timocharis; and it is almost certain, as Mr. Delambre has recently proved, that he made very few if any observations at Alexandria. Though Hipparchus was indebted for nothing to the Egyptian priests, it is nevertheless probable, that the latter would have fixed their attention on the connexion, which exists between the heliacal rising of Sirius and the day of the summer solstice. The difference between them \*, in an interval of fourteen

\* The heliacal rising of Sirius was two days distant from the solstice 2682 years before our era; thirteen days distant, 1322 years before it; and 139 years after our era, the difference amounted to twenty-six days; but by happy compensations, notwithstanding the

hundred years, varied thirteen days. We know too little of the astronomy of the Egyptians, to form an unfavourable judgment of it from the silence of the Greeks, and that of Manetho, who was as little skilled in the accurate sciences, as he was in the laws of versification. This subject, so important to the history of the progress of the human mind, will be soon discussed anew by Mr. Fourier, whose learned researches, so impatiently expected, will be published in the *Description of the Ancient Monuments of Egypt*.

The high antiquity of the Balance advanced by Abbé Pluche in the middle of the last century, though lately contested by two distinguished antiquaries, Testa and Hager, has been demonstrated by the researches of Ideler and Butmann †. I imagine it may be agreeable to those scientific persons, who are engaged in the study of ancient astronomy, to find here a reference to all the passages, that relate to the constellation of the Balance, and which I have carefully verified: Hipparchi Comm. in Arat., lib. 3, c. 2 (Pettavii Uranolog., ed. 1703, p. 134); Geminus, Elem.

precession of the equinoxes, the rising of Sirius remained for 3000 years attached to the same day of the Julian calendar." (Ideler, p. 88 and 90.)

† Ideler, Hist. Untersuch., 1806, p. 371; Sternnamen, p. 175; Pluche, Hist. du Ciel (ed. de 1740), tom. 1, p. 21; Montucla, Hist. des Mathem., P. 1, lib. 2, § 7, p. 79; Bailly, Hist. de l'Astr., vol. 1, p. 499 and 501; Schmidt, de Zod. Origine, p. 54; Asiat. Researches, vol. 2, p. 302; and vol. 9, p. 347; Dupuis, dans la Revue Philos., 1806, Mai, p. 311; Swartz, Rech. sur l'Origine de la Sphère, p. 99; Schaubach, Gesch. der Griech. Astron. p. 242, 296, and 370; Hager, Illustraz. d'uno Zodiaco, p. 25—35; Anquetil, Zend-Avesta, tom. 2, p. 549; Testa, Dissertaz. Sopra due Zodiaci dell' Egitto, 1802. p. 20, 39, and 42; Delambre, Astronomie, tom. 1. p. 478.

Astron., c. 1 and 16 (Uranol., p. 139); Varro de Lingua Latina, lib. 6, c. 2 (Auctores Lat. Linguae, ed. Gothofred, 1585, p. 48); Cicero de Divin., lib. 2, c. 46 (ed. Jos. Oliveti, 1740, tom. 3, p. 81 and 478); German. Cæsar in Arati Phœn. v. 89 (Aygin. Opera, Bas., 1535, p. 164 and 187); Vitruv. de Architect., lib. 9, c. 4 (ed. Joannis de Laet, Amst., 1649, p. 190); Manil. Astron., lib. 1, v. 609, and lib. 4, v. 203 (ed. Mich. Fayer, tom. 1, p. 77 and 313); Virg. Georg., lib. 1, v. 34; Servius, Comment. in Virgi lib. 5, p. 208 (ed. Pancrat. Mascivii, tom. 1, p. 131); Plin., Hist. Nat., lib. 18, c. 25, sect. 59 (ed. Harduin., 1723, tom. 2, p. 130); Ptolem., lib. 9, c. 7; Plut. de Plac. phil., lib. 1, c. 6 (ed. Reiske, vol. 9, p. 486); Manethonis Apotelesm., lib. 2, v. 137 (ed. Gronov. 1698, p. 23); Macrobian Comment in Somnum Scip., lib. 1, c. 19, et Saturn., lib. 1, c. 12 and 22 (Opera omnia, ed. Gronov., 1670, v. 90, 244 and 306); Achilles Tatius, Isagoge, c. 23 et frag. (Uranol., p. 85 and 96); Theon. Comment. in Ptol. (ed. Bas., 1538, p. 386); Martianus Capella de Nupt. Philologiæ et Mercurii, lib. 8 (ed. princeps, 1498, fol. R. 3); Luc. Ampelius liber mem. cap. 2 (ed. Bipontina ad calcem Flori, p. 158); Kircher, Oedip. Ægypt., 1653, tom. 2, p. 206.

Among the ancient writers who mention the sign of the Balance (*ζυγός, τὰ ζυγὰ, λίτραι, jugum, libra*), the only one anterior to the reform of the calendar by Julius Cæsar is Hipparchus. The passage in the commentary of Hipparchus on Aratus has escaped the learned researches of Abbé Testa, who asserts, that, before Geminus, the word *ζυγός* was unknown to the Greek astronomers. He adds: "Ne tre libri del



commentario d'Ipparco sopra Arato, la libra non comparisce e *non si nomina mai, come ognuno puo assicurarsene da per se* (Testa, del Zodiaco, p. 21 and 46). I ought here to observe, that the passage of Hipparchus, which I have cited, is found in the commentary divided into three books; and not in the fragment, which appears apocryphal, and which is attributed sometimes to Hipparchus, and at other times to Eratosthenes. The words ζυγός and *jugum* may, without doubt, denote a couple, whatever is double or paired; but the prose writers in this sense employ rather ζεύγος than ζυγός, and Ptolemy places τὰ ζυγὰ in opposition with χηλαί, which he would not do, if ζυγός and ζυγὰ were the explanation of χηλαί. "The star," he says, "which according to them (the Chaldeans) is in the basin of the Scales, and according to our principles (according to our manner of dividing the Zodiac), in the claws of the Scorpion." \*

\* Ptolem, ed. Bas., p. 232. Theon, in his commentary, often employs, instead of ζυγός and τὰ ζυγὰ the word λίτραι; a substitution, which leaves no doubt of the signification of ζυγός. Manetho says, "the claws of the Scorpion, which *the holy men* call the beam of the Scales;" and this passage would be very remarkable, if it were proved that Manetho, the astronomer, is the same person as the author of the Ἀ'γυπτιακά, and that consequently he lived under the reign of Ptolemy Philadelphus. (Fabricii Bibl. Græca, 1795, tom. 4, p. 135—139.) The word ζυγός is not found in the asterisms of Eratosthenes (ed. Schaubach, c. 7, p. 6), but in the Commentary on Aratus (Uran. p. 142), which bears falsely the name of this ancient astronomer, and which appears to belong to Achilles Tatius.



## NOTES

TO

VOLUME FOURTEEN.

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PAGE 4. *Mounds raised by men.* In both Americas it is a matter of inquiry, what was the intention of the natives, when they raised so many artificial hills, several of which appear to have served neither as tombs, nor watch-towers, nor the base of a temple. A custom established in eastern Asia may throw some light on this important question. Two thousand three hundred years before our era, sacrifices were offered in China to the Supreme Being, Chan-ty, on four great mountains called the *Four Yo*. The sovereigns, finding it inconvenient to go thither in person, caused eminences representing these mountains to be erected by the hands of men, near their habitations. Voyage of Lord Macartney, vol. 1, page lviii. Hager, Monument of Yu, 1802, p. 10.

Page 10. *Plain of Tapia, near Lican.* That no erroneous ideas may be entertained respecting the dress of the Indians of the province of Quito, I must here

observe, that this dress is generally black ; but persons in tolerable circumstances, for instance, those of the mixed race, wear *ruanas* of striped serge (*listado*), which cover the Indian tunic, called *capisayo*. These *ruanas* are depicted on the 25th Plate ; in order that the figures, detaching themselves from the back ground of the landscape, may serve to vary the aspect. The shape of the garment is very exact, but the colours of the *listado* are too lively in some of the copies.

Page 30. *System of the Hindoos*. I am mistaken in what I have said, on the testimony of some of the *Shastras*, that all the *yugas* of the Hindoos terminated by inundations. Mr. Maier, in his interesting work on the Religious Ideas of Nations, observes, that, according to the doctrine of the Banians, the first generation was destroyed by the waters ; and the second perished by the effect of tempests : that in the third age the yawning earth swallowed up the human race ;—and that the fourth age will terminate by fire. (Friedrich Maier, *Mythologisches Taschenbuch*, tom. ii, p. 299 ; and *Allgemeines Mythol. Lexicon*, tom. ii, p. 471.) This doctrine, except in the order of the catastrophes, offers a striking analogy with the Mexican tradition.

Page 46. *Tlacahuepancuexcotzin*. Nothing strikes Europeans more in the Azteck, *Nahuatl*, or Mexican language, than the excessive length of the words. This length does not always depend, as some learned men have pretended, on the circumstance, that the words are compounded, as in the Greek, the German, and the Sanscrit, but on the manner of forming the substantive, the plural, or the superlative. A kiss is called *teten-namiquiliztli*, a word formed from the verb *tennamiqui*, to embrace, and the additive particles *te* and *liztli*. In

the same manner *tlatolana*, to ask, and *tetlatolaniliztli*, a demand; *tlayhiouiltia*, to torment, and *tetlayhiouiltiztli*, torment. To form the plural, the Aztecks in several words double the first syllable; as *miztli*, a cat, *mimiztin*, cats; *tochtli*, a rabbit, *totochtin*, rabbits. *Tin* is the termination which indicates the plural. Sometimes the duplication is made in the midst of a word; for instance, *ichpochtli*, a girl, *ichpopochtin*, girls; *tehpochtli*, a boy, *telpopochtin*, boys. The most remarkable example I have met with of a real composition of words is found in the word *amatlacuilolitquitcatlaxtlahuilli*, which signifies the reward given to the messenger, who carries a paper, on which is indicated, in symbolic characters, or in painting, some tidings to be transmitted. This word, which forms by itself an Alexandrine line, contains *amatl*, paper of the American agave; *cuiloa*, to paint, trace significative characters; and *tlaxtlahuilli*, the payment or salary of a workman. In the Azteck language the letters, B, D, F, G, and R are wanting (Carlos de Tapia Zenteno, Cura de Tampamolón, Arte novissima de Lingua Mexicana, 1753, p. 7). So in the Biscayan language we do not find the letter F, and there is no word which begins by an R. However distinct certain languages appear at first sight, however extraordinary their caprices or idioms, all have an analogy with each other; and these multifarious relations will be perceived, in proportion as the philosophic history of nations, and the study of languages, which are at once the production of the intelligence, and the expression of the individual character of man, shall be brought to perfection.

Page 63. *First age of the Earth*. The Franciscan monk, Andres de Olmos, well versed in the different languages of Mexico, of which he composed gram-

mars, has left a very curious account of the cosmogony of Anahuac. (Marieta, Tercera Parte de la Historia Ecclesiastica, 1596, pag. 48.) The god Citlalatonac was united to the goddess Citlalicue: the fruit of this union was a stone, a flint, *tecpatl*, which fell on the Earth, near a place called the Seven Caverns, *Chicomoztotl*. This *betylium* is found among the hieroglyphics of the years and the days. It was an aerolite, a divine stone, a *teotetl*, which, in breaking, produced 1600 subaltern divinities, inhabitants of the Earth, who, finding themselves without slaves to serve them, obtained from their mother the permission of creating men. Citlalicue ordered Xolotl, one of the gods of the Earth, to go down to hell in search of a bone; and this bone, broken like the aerolite, or *tecpatl*, gave birth to mankind. (Torquemada, T. ii, p. 82.) According to this same tradition, the first man, *Iztacmixcuatl*, or *Iztacmixcohuatl*, dwelt at Chicomoztotl, where he attained a very advanced age. His wife, *Ilancueitl*, bore him six sons, from whom descended all the nations of Anahuac. *Xelhua*, the oldest of his sons, peopled Quauhyuechola, Tzoca, Epatlan, Teopantla, Tehuacan, Cozcatla, and Totetlan. *Tenuch*, the second, was the father of the Tenuches, or Mexicans properly so called. *Ulmecatl* and *Xicalancatl*, from whom descended the Olmecks and the Xicalancks, peopled the environs of Tlascala, Cuatzacualco, and Totomihua-can. *Mixtecatl* and *Otomitl* became the chiefs of the Mixtecks and the Otomites. (Torquemada, T. i, p. 34 and 35.) This genealogy of the nations reminds us of the ethnographical table of Moses; and it is so much the more remarkable, as the Toltecks and the Aztecks, among whom this tradition is found, considered themselves as belonging to a privileged race, very different



from that of the Otomites and the Olmecks. This is an attempt to reduce to a general principle the diversity of languages, and explain it by the common origin of all nations.

Page 66. *Going out from Aztlan.* To facilitate the reading of this work, respecting the monuments of the ancient people of Mexico, I shall in this place insert a fragment, taken from a Sketch of the History of Anahuac, which I began to compose during my abode in Mexico. This fragment will be useful to those who, not having leisure to recur to the original sources of information, must satisfy themselves with the study of Robertson's History of America, admirable for the sagacity with which it has been compiled; but too much abridged in the part relating to the Toltecks and Aztecks. I have carefully cited the authors, whom I have consulted for the indication of the dates.

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### *Chronological Table of the History of Mexico.*

THE mountainous region of Mexico, like Caucasus, was inhabited from the most remote period by a great number of nations of different races. A part of these nations may be considered as the remains of numerous tribes, which, in their migrations from the north to the south, had traversed the country of Anahuac; and of which some families, retained by an attachment to the soil they had cleared, had separated from the body of the nation, preserving their language, their manners, and the primitive form of their government.



The most ancient nations of Mexico, those who considered themselves as *autochthones*, are the Olmecks, or Hulmecks, who extended their migrations to the gulf of Nicoya, and to Leon de Nicaragua; the Xicalancks; the Cores, the Tepanecks, the Tarascks, the Miztecks, the Tzapotecks, and the Otomites. The Olmecks and the Xicalancks, who inhabited the elevated plain of Tlascala, boasted of having vanquished or destroyed on their arrival the giants, or *quinametin*; a tradition founded probably on the appearance of the fossil bones of elephants found in those elevated regions of the mountains of Anahuac (Torq. tom. i, p. 37 and 364). Boturini asserts, that the Olmecks, driven out by the Tlascaltecks, peopled the West India islands and South America.

The Toltecks, migrating from their country, Huehuetlapallan, or Tlapallan, in the year 544 of our era, arrive at Tollantzinco, in the country of Anahuac, in 648; and at Tula, in 670. Under the reign of the Tolteck king Ixtlicuechahuac, in 708, the astrologer Huematzin composed the celebrated *Divine Book*, the *Teo-amoxtli*, which contained the history, the mythology, the calendar, and the laws of the nation. The Toltecks also appear to have constructed the pyramid of Cholula, on the model of the pyramids of Teotihuacan; which last are the most ancient of all, and Siguenza believes them to be the work of the Olmecks (Clav., tom. i, p. 126, and 129; tom. iv, p. 46).

It was in the time of the Tolteck monarchy, or in ages anterior to it, that the Mexican Budha, *Quetzalcohuatl*, appeared; a white man, bearded, and accompanied by other strangers, who wore black garments, in the form of cassocks. Till the 16th century, the people wore these dresses of Quetzalcohuatl, to dis-

guise themselves on festivals. The name of this saint was *Cuculca*, in Yucatan, and *Camaxtli* at Tlascala (Torq. t. 2, p. 55, and 307). His cloak was spotted with red crosses. High priest of Tula, he founded religious congregations. "He ordained sacrifices of flowers and fruits, and stopped his ears when he was spoken to of war." His fellow adventurer, *Huemac*, was in possession of the secular authority, while he himself enjoyed the spiritual power. This form of government was similar to those of Japan and of Cundinamarca (Torq. tom. 2, p. 237): but the first monks, Spanish Missionaries, have gravely discussed the question, whether Quetzalcohuatl, was a Carthaginian or an Irishman. From Cholula he sent colonies to Mixteca, Huaxayacac, Tabasco, and Campeachy. It is supposed, that the palace of Mitla was built by order of this unknown personage. At the time of the arrival of the Spaniards, certain green stones, which had belonged to Quetzalcohuatl, were preserved as precious relics at Cholula; and F. Toribio de Motilinia beheld sacrifices offered in honor of the saint on the summit of the mountain of Matlalcuye, near Tlascala. The same monk was present at Cholula, at ceremonies ordered by Quetzalcohuatl, in which the penitents sacrificed their tongue, ears, and lips. The high priest of Tula had made his first appearance at Panuco: he left Mexico, with the intention of returning to Tlalpallan; and it was in this journey that he disappeared, not in the north, as might have been supposed, but in the east, on the banks of the Rio Huasacualco (Torq. tom. 2, p. 307—311). The nation expected his return during a number of ages. "When, on my arrival in Tenochtitlan, I passed by Xochimilco," says the monk, Bernard de Sahagun, "every

person asked me whether I came from Tlapallan. I did not then understand the meaning of this question; but I afterward knew, that the Indians took us for the descendants of Quetzalcohuatl" (Torq. tom. 2, p. 53). It is no doubt interesting to treasure up the most minute circumstances relative to the life of this mysterious personage, who, belonging to the heroic times, was probably anterior to the Toltecks.

Pestilence and destruction of the Toltecks in 1051. They push their migrations farther to the south. Two children of the last king, and some Tolteck families, remain in the country of Anahuac.

The Chichimecks, issuing from their country Amaquemecan, arrive in Mexico in 1170.

Migration of the Nahuatlacks (Anahuatlacks) in 1178. This nation contained the seven tribes of Sochimilcks, Chalcks, Tepanecks, Acolhuans, Tlahuicks, Tlascaltecks, or Teochichimecks, and Aztecks or Mexicans, who, as well as the Chichimecks, all spoke the Tolteck language (Clav., tom. 1, p. 151, tom. 4, p. 48). These tribes called their country Aztlan, or Teo-Acolhuacan, and declared it to be near Amaquemecan (Garcia, Origen. de los Indios, p. 182 and 502). The Aztecks had migrated from Aztlan, according to Gama, in 1064; according to Clavigero, in 1160. The Mexicans, properly so called, separated themselves from the Tlascaltecks and the Chalcks in the mountains of Zacatecas (Clav., tom. 1, p. 156; Torq. tom. 1, p. 87; Gama, Descripcion de dos Piedras, p. 21).

Arrival of the Aztecks at Tlalixco, or Acahualtzinco, in 1087; reform of the calendar, and first festival of the new fire, since the going out from Aztlan, in 1091.

Arrival of the Aztecks at Tula, in 1196 ; at Tzompanco, in 1216 ; and at Chapoltepec, in 1245.

“ Under the reign of Nopaltzin, king of the Chichimecks, a Tolteck, called Xiuhltato, lord of Quauhtepec, taught the people, about the year 1250, the culture of maize and cotton, and the making of bread from the flour of maize. The small number of Tolteck families, that dwelt along the banks of the lake Tenochtitlan, had entirely neglected the culture of this grain ; and the American corn would have been for ever lost, if Xiuhltato had not preserved a few seeds from his early youth” (Torq., tom. 1, p. 74).

Union between the three nations of the Chichimecks, the Acolhuans, and the Toltecks. Nopaltzin, son of the king Xolotl, weds Azcaxochitl, daughter of a Tolteck prince ; Pochotl, and the three sisters of Nopaltzin, form matrimonial alliances with the chiefs of the Acolhuans. Few nations exist, whose annals offer so great a number of names of families and places as the hiéroglyphic annals of Anahuac.

The Mexicans fall under the yoke of the Acolhuans in 1314, but soon succeed in freeing themselves by their valor.

Foundation of Tenochtitlan, in 1325.

Mexican kings : 1, Acamapitzin, 1352-1389 : 2, Huitzilihuitl, 1389-1410 : 3, Chimalpopoca, 1410-1422 : 4, Itzcoatl, 1423-1436 : 5, Motezuma-Illuicamina, or Motezuma, the first, 1436-1464 : 6, Axajacatl, 1464-1477 : 7, Tizoc, 1477-1480 : 8, Ahuitzotl, 1480-1502 : 9, Motezuma-Xocojotzin, or Motezuma the second, 1502-1520 : 10, Cuitlahuatzin, whose reign lasted only three months : 11, Quauhtemotzin, who reigned during nine months of the year 1521 (Clav., tom. 4, p. 55-61).



Under the reign of Axajacatl, died Nezahualcojotl, king of Acolhuacan, or Tezcuco, equally memorable for the improvement of his mind, and the wisdom of his legislation. The king of Tezcuco had composed, in the Azteck language, sixty hymns in honor of the Supreme Being, an elegy on the destruction of the city of Azcapozalco, and another on the instability of human greatness, as proved by the fate of the tyrant Tezozomoc. The great nephew of Nezahualcojotl, baptized under the name of Ferdinand Alba Ixtilxochitl, has translated a part of these verses into Spanish; and the Chevalier Boturini possessed the original of two of his hymns, composed fifty years before the conquest, and written in the time of Cortez, in Roman characters, on paper of *metl*. I have sought these hymns in vain among the remains of the Boturini collection, preserved in the palace of the viceroy of Mexico. It is well worthy of remark, that the celebrated botanist Hernandez has made use of several of the drawings of plants and animals, with which king Nezahualcojotl had ornamented his palace at Tezcuco, and which had been made by Azteck painters.

Arrival of Cortez on the shore of Chalchicuecan in 1519.

Taking of the city of Tenochtitlan, in 1521.

The Counts of Motezuma and of Tula, residing in Spain, trace their descent from Ihuitemotzin, grandson of the king Motezuma-Xocojotzin, who had married Donna Francisca de la Cueva. The illustrious houses of Cano-Motezuma, Andrade Motezuma, and the Count of Miravalle (at Mexico), derive their origin from Tecuichpotzin, daughter of the king Motezuma-Xocojotzin. This princess, baptized under the name



of Elizabeth, survived five husbands, among whom are numbered the last two kings of Mexico, Cuitlahuitzin, and Quauhtemotzin, and three Spanish officers.

Page 83. *Cihuacohuatl*. Mr. Maier thinks, that this figure of the mother of mankind, as well as that delineated in the 13th plate, refer to the history of *Ata-Entsik* and his two little children, *Juskeka* and *Tahuitzaron*, celebrated among the Hurons and the Iroquois. Mytholog. Taschenb., tom. 2, p. 241, and tom. 2, p. 294. (Creuxius, Hist. Canad. Seu Novæ Franciæ, 1664, lib. 1, p. 79.)

Page 85. *Shape of the forehead*. The head of Teocipactli, plate 37, No. 6, has a singular resemblance to that represented in the 11th plate. According to the accounts received from Mexico, since the publication of the first plate of this work, this remarkable sculpture was not found at Oaxaca, as I mistakenly asserted (vol. xiii, p. 126—134), but farther to the south, near Guatemala, the ancient *Quauhtemallan*. This circumstance tends still farther to remove the doubts, that might be entertained respecting the origin of so strange a monument. Besides, the ancient inhabitants of Guatemala were a highly cultivated people, as is proved by the ruins of a great city, situate in a place which the Spaniards call *el Palenque*.

Page 125. *The hieroglyphics of numbers*. Mr. Gatterer, in the abstract of his Universal History, attributes to the Phœnicians and Egyptians the admirable invention of expressing tens by the position of the ciphers. He positively asserts, that, in the Egyptian manuscripts written in cursive characters, nine letters of the alphabet are recognised indicating nine units; and a tenth sign, performing the office of the nought of

the Hindoos and the Thibetans. The same writer asserts, that Cecrops and Pythagoras were acquainted with this system of Egyptian numeration; and that it took its origin from the lineary hieroglyphical arithmetic, in which perpendicular strokes have a value of position, while several rows of horizontal bars denote tens, and the multiples of ten (Gatterer, *Weltgeschichte bis Cyrus*, p. 586). According to this hypothesis, the notation peculiar to the Hindoos would have been introduced for the second time into Europe by the Arabians; but these assertions do not seem to rest on very solid foundations (Kircher, *Obel. Pamph.*, p. 461). We know, that among the Romans, whose numerical system is infinitely more imperfect than that of the Greeks, the unit changes its value according as it is placed before or after the signs of five or of ten. A real value of position is found in the notation, which, according to Pappus, Apollonius made use of for the myriads, (Delambre, *Arith. des Grecs dans les Oeuvres d'Archimède*, 1807, p. 578): but none of the nations, of which we have authentic accounts, appear to have attained this simple and uniform method, which was followed from remote antiquity by the Hindoos, the Thibetans, and the Chinese.

Page 128. *Twelve Sunas*. The inhabitants of Otaheite divide the year, not into twelve, but into thirteen months, or moons, to which they give the names of the sons of the Sun (*Missionary Voyage to the Pacific Ocean*, 1799, p. 341—344). This division by thirteen is very extraordinary no doubt; but we know, that people far advanced in civilization have long stopped in their calendar at numbers the least fitted for the division of time. See the valuable researches of Mr. Nie-

buhr, on the Roman and Etruscan year (Rœmische Geschichte, tom. i, p. 91 and 192).

Page 144. *Complete notice of the Paintings.* It is remarkable enough, that a Franciscan monk, Torquemada, should have branded as a barbarian bishop Zumaraga, too notorious for the destruction of the historical paintings of the Aztecks (Mon. Ind., tom. i, p. 276). One of the writers in the Literary Gazette of Göttingen (1811, p. 1553) asserts, that there exist five Mexican manuscripts in the Bodleian Library at Oxford (Monthly Mag., vol. ii, p. 337). The same writer, in giving an account of my researches on the monuments of the natives of Mexico, compares the figure represented in the 1st and 2d plate to the head engraved in Tassie, Cat. vol. vii, p. 248.

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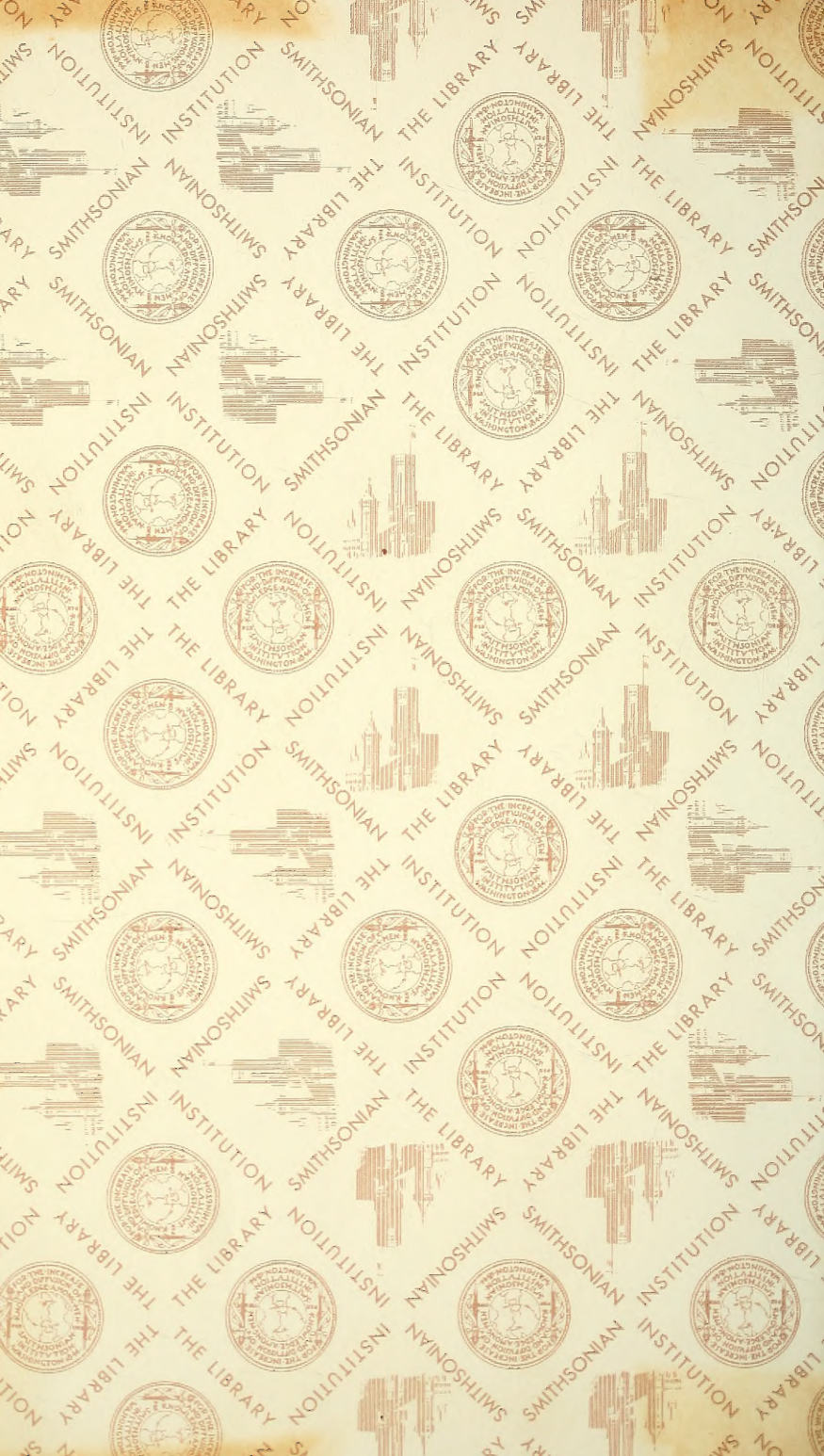
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